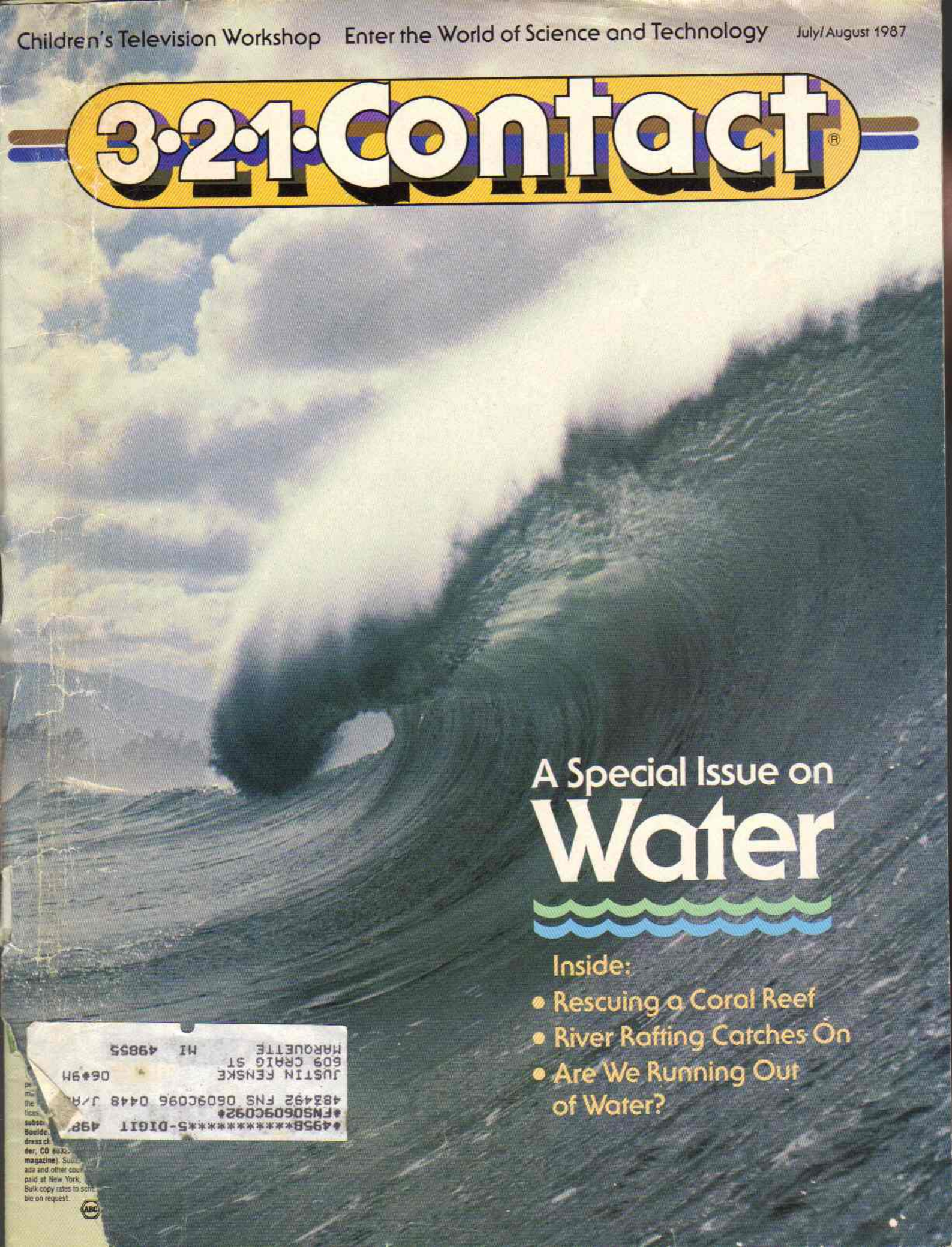
Children's Television Workshop Enter the World of Science and Technology July/August 1987

3·2·1·Contact®



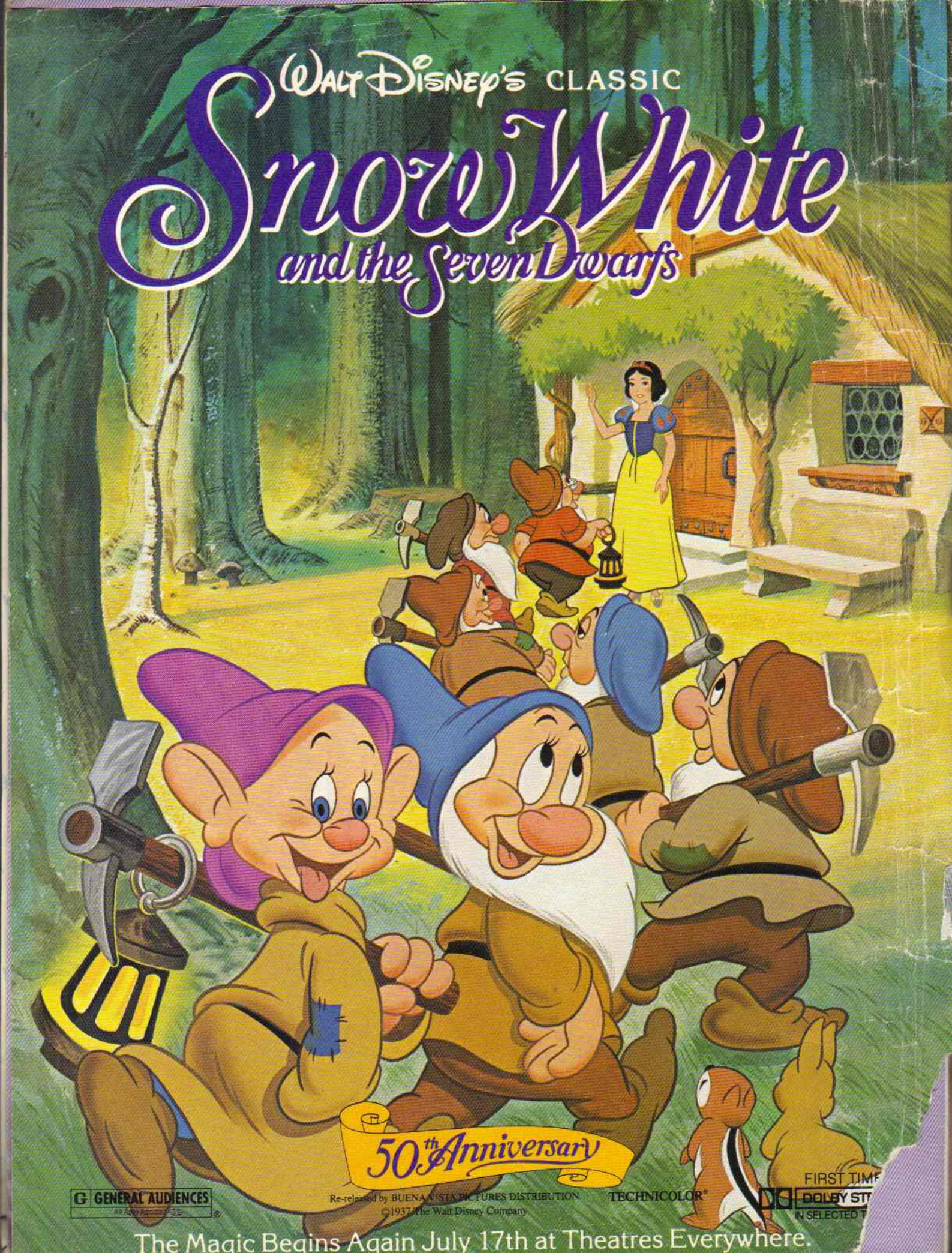
A Special Issue on Water

Inside:

- Rescuing a Coral Reef
- River Rafting Catches On
- Are We Running Out of Water?

#495B**********5-DIGIT 498
#FNS0609C092#
483492 FNS 0609C096 0448 J/A
JUSTIN FENSKE 06#9M
609 CRAIG ST
MARQUETTE MI 49855

pe
ma
the
fices
subsc
Boulde
dress ch
der, CO 8032
magazine). Sub
ada and other cou
paid at New York,
Bulk copy rates to sch
ble on request.


Walt Disney's CLASSIC
Snow White
and the Seven Dwarfs
50th Anniversary
G GENERAL AUDIENCES
Re-released by BUENA VISTA PICTURES DISTRIBUTION
©1937 The Walt Disney Company
TECHNICOLOR®
FIRST TIME
DOLBY ST
IN SELECTED T
The Magic Begins Again July 17th at Theatres Everywhere.

Publisher
Nina B. Link

Editor
Jonathan Rosenbloom
Art Director
Al Nagy
Senior Editor
Richard Chevat
Associate Editors
Russell Miller
Ellen Rudolph Mednick
Eric Weiner
Assistant Art Director
Jo Lynn Alcorn
Editorial Assistant
Sima Bernstein

Director of Research/Magazine Group
Dr. Istar Schwager
Field Research Coordinator
Tony Wilsdon

Director/Creative Services
Aura Marrero

Vice President/General Manager
Bill Hitzig
Business Manager
Julie K. Andersen
Circulation Director
Kathleen O'Shaughnessy
Subscription Manager
June Wick
Promotion Manager
Jill Schiffman
Production Director
Carlos N. Crosbie
Production Manager
Bill Santana

Advertising Director/Magazine Group
Linda Vaughan
National Sales Manager
Gail Delott
Advertising Sales Manager
Lori Beck Golden
Advertising Representatives
Jill Rosenberg
Karen Siegel

ADVISORS
Dr. Gerald S. Lesser
Professor, Harvard Graduate School of Education
Dr. Charles Walcott
Director, Lab. of Ornithology, Cornell University
Dr. Jearl Walker
Professor of Physics, Cleveland State University
Dr. Charles A. Whitney
Professor of Astronomy, Harvard University

ADVERTISING SALES OFFICE
Advertising Director/Magazine Group
Linda Vaughan
3-2-1 Contact Magazine
One Lincoln Plaza
New York, NY 10023
(212) 595-3456

Winner/National Magazine Award
General Excellence

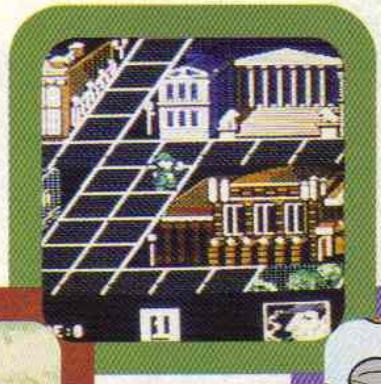
EDPRESS
Award Winner/Feature Category

3-2-1 Contact (ISSN 0195-4105) is a publication of the Children's Television Workshop, published ten times during the year, monthly except for February and August. © 1987 Children's Television Workshop. All rights reserved. All contents owned by the Children's Television Workshop and may not be reprinted without permission. 3-2-1 Contact is a trademark and a service mark of the Children's Television Workshop. Printed in the U.S.A. Number 78, July/August 1987. Editorial offices, One Lincoln Plaza, New York, N.Y. 10023. **Send subscription orders to 3-2-1 Contact, P.O. Box 53051, Boulder, CO 80322-2933. POSTMASTER: Send address changes to: 3-2-1 Contact, P.O. Box 53051, Boulder, CO 80322-2933 (including label from cover of magazine).** Subscriptions: 1 year U.S.A. $11.95; Canada and other countries add $6. Second-class postage paid at New York, NY and additional mailing offices. Bulk copy rates to schools and other institutions available on request.

ABC

3·2·1 Contact

Page 20



Page 36

Page 12

Page 30

Featuring This Month

2 This Issue Is All Wet!
6 Are We Running Out of Water?
12 Reef Rescue Squad: Repairing an Underwater World
20 Wet and Wild: Rafting Brings You Close to Nature
23 What Do You Know About Water? A CONTACT Quiz

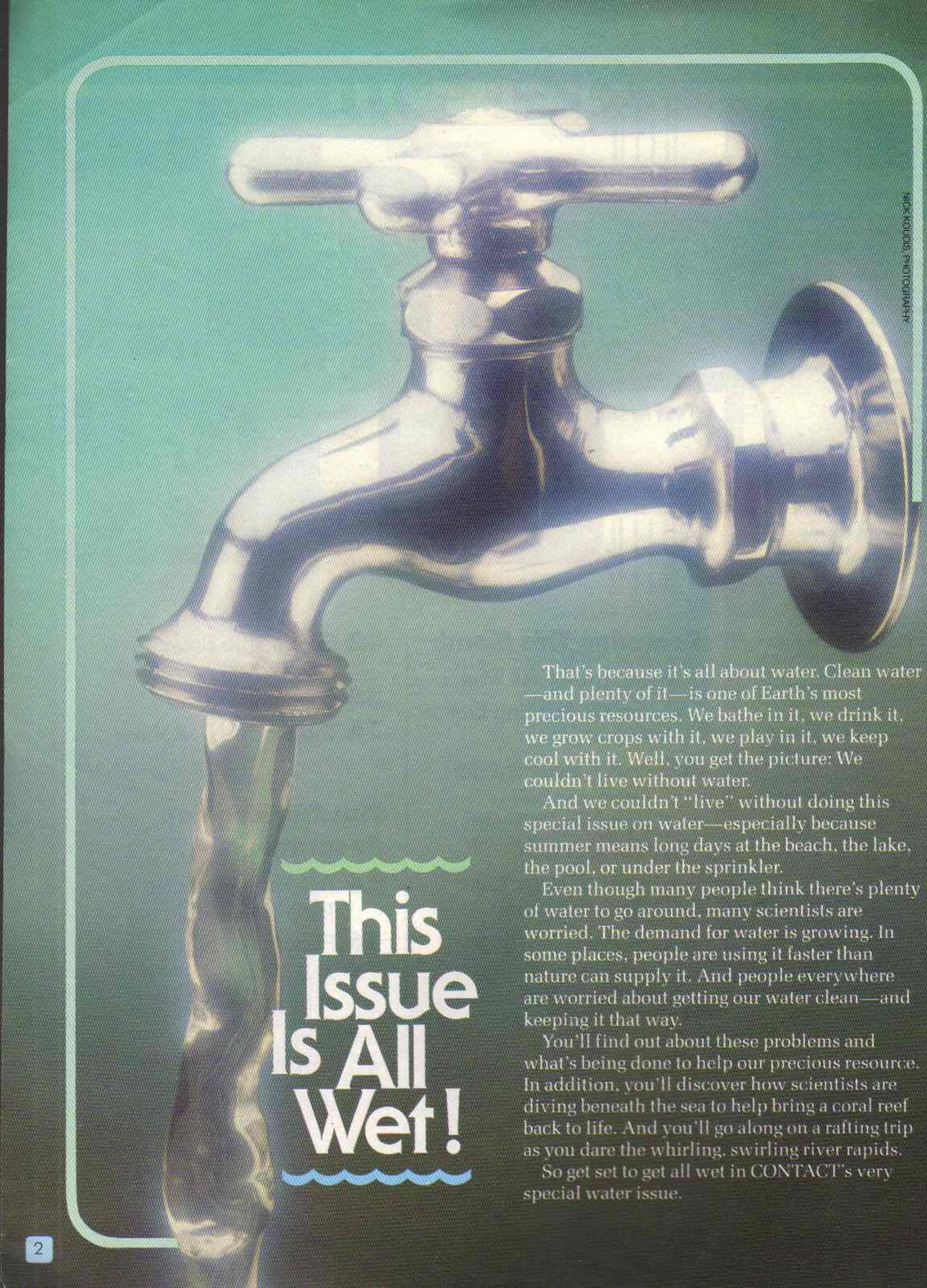
ENTER: The High-Tech World of Computers

29 Word Search
30 Reviews
32 Go with the Flow: A Flowchart Adventure
34 Basic Training
36 The Slipped Disk Show

Plus Our Regular Departments

3 TNT: Tomorrow's News Today
16 Factoids
18 Any Questions?
26 The Bloodhound Gang
38 Extra!
40 CONTACT Lens
41 Did It!

Cover Photo:
Tony Arruza/Bruce Coleman Inc.



This Issue Is All Wet!

That's because it's all about water. Clean water—and plenty of it—is one of Earth's most precious resources. We bathe in it, we drink it, we grow crops with it, we play in it, we keep cool with it. Well, you get the picture: We couldn't live without water.

And we couldn't "live" without doing this special issue on water—especially because summer means long days at the beach, the lake, the pool, or under the sprinkler.

Even though many people think there's plenty of water to go around, many scientists are worried. The demand for water is growing. In some places, people are using it faster than nature can supply it. And people everywhere are worried about getting our water clean—and keeping it that way.

You'll find out about these problems and what's being done to help our precious resource. In addition, you'll discover how scientists are diving beneath the sea to help bring a coral reef back to life. And you'll go along on a rafting trip as you dare the whirling, swirling river rapids.

So get set to get all wet in CONTACT's very special water issue.

Tomorrow's News Today

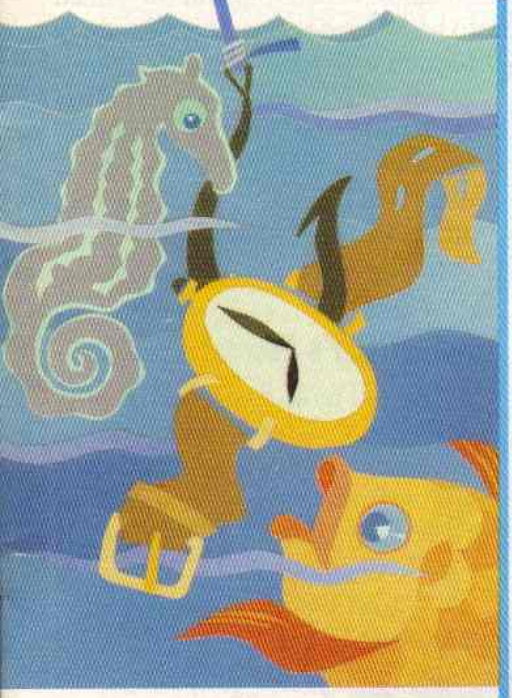


ILLUSTRATION BY JOLYNN ALCORN

Wet Watch

You can water your horse, and you can water your plants—and now you can water your watch.

In fact, you have to water the new Water Watch, or it won't keep time. Water ruins most watches, if it sneaks through their waterproof seals. But the Water Watch won't work if it's dry.

The secret is a battery that uses water to produce electricity. It's made of small pieces of two metals, zinc and copper, separated by a spongy pad. When the pad is moist, it sets off a chemical reaction between the metals. The reaction gives off enough electricity to power the watch.

Water Watch wearers will want to wet their watches once a week. They can use any liquid—even soda pop. But the El Paso, TX company that makes the watches warns that the sugar in soda might "gum up" the battery. The watches are in stores for about $25.

Giant Drops

It rains real big in parts of Hawaii. Scientists have found raindrops there three times as big as any raindrops ever measured before—drops as big in diameter as a green pea.

As warm wet air rises, it cools, and tiny water droplets fall out. They gather into clouds. Inside each cloud, droplets move around, bump into each other and join together. They get bigger and heavier until they fall out of the cloud. That's rain.

What seems to make the Hawaiian drops grow so large? Strong winds that blow upward, holding raindrops inside clouds. The drops get bigger and bigger until they're heavy enough to fight the up-winds and fall.

Dr. Kenneth Beard and his research team found the super-drops when they flew up to the clouds to take high-tech laser photos of falling rain. That was a new idea. Rain watchers usually stay on the ground. "We found bigger drops because we went to look for them," Dr. Beard told CONTACT.

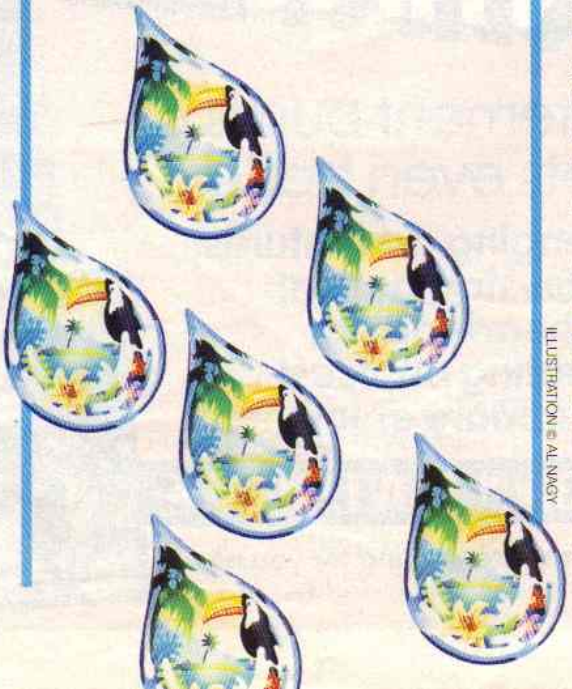


ILLUSTRATION © AL NAGY

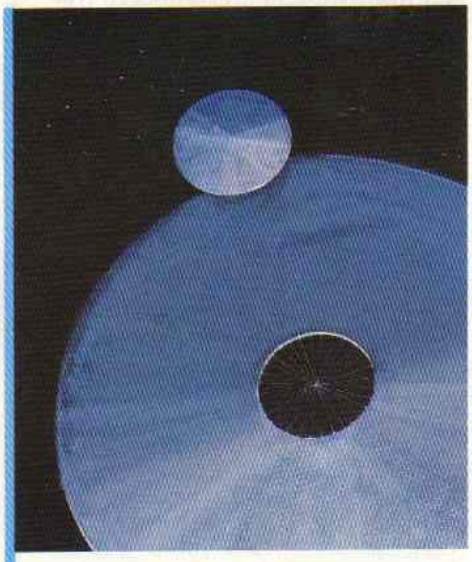


ILLUSTRATION BY S. KIYOHARA, COURTESY HUGHES LABS

Sailing to a Star

One day, Earth voyagers may sail to faraway stars. That's not just a fancy way of speaking. It's a serious idea.

Dr. Robert L. Forward, a California scientist, is working on a way to attach aluminum sails to spacecraft and send them sailing across the galaxy on winds of light.

Dr. Forward's space sailboats would carry thin circular sails up to six kilometers wide. A powerful Earth-bound laser would pour light toward a huge lens—1,000 kilometers wide—floating in space. The lens would re-focus the laser light into a beam so strong it would push the spacecraft along at almost half the speed of light.

But once travelers reached a star 11 light-years away, how could they get back to Earth? No problem, Dr. Forward told CONTACT. They'd snip off the sail's outer ring and flip it around behind the spacecraft. Laser light would hit the outer ring, bounce onto the back of the inner sail, and push the spacecraft safely home.

Tomorrow's News Today

Itch Free

For many kids and grownups, summertime means walks in the woods, campfires—and poison ivy, poison oak and poison sumac.

Now there's an aerosol spray that stops poison plant itch before it starts. You spray it on before heading for the woods. Then, unless you're very sensitive to poison ivy, it won't affect you.

The harmless spray leaves a thin layer of very fine clay on the skin. The clay soaks up poison ivy's itch-producing chemicals before they start to work.

The U.S. government developed the itch-blocker for forest workers. It isn't available to the public yet. So for now, poison ivy sufferers will have to stick to the old standbys: cold compresses, calamine lotion and rest.

ILLUSTRATION BY NED SHAW

Ocean-Deep Sleep

Hundreds of hotels all over the world offer rooms with an ocean view. But when you look out the windows of a new hotel in Florida, the ocean is all you see—no boats, no beach, not even any sky. That's because this hotel is 30 feet below the surface.

The hotel, "Jules's Undersea Lodge," used to be a scientific laboratory. Now it's a vacation spot for deep-sea divers who don't want to come up for air.

Jules's Lodge has room for just six guests at a time, and they need to be trained scuba divers. After a hard day of ocean exploring, the guests can watch TV, listen to the stereo and work or play on personal computers. And if guests don't feel like wearing masks and air tanks, they can still get wet—in the hotel's underwater bathtub!

So What's New?

You tell us and you'll get a nifty CONTACT T-shirt—if we print your story. Send us any science stories from the news that have to do with the future. (Be sure to tell us where you heard the story.)

TNT/3-2-1 CONTACT Magazine
1 Lincoln Plaza
New York, NY 10023

ADVERTISEMENT

THE ADVENTURE CONTINUES...

...and the excitement builds as the best gets even better!

■ More challenging adventures!
■ More non-stop action!
■ More heart-racing, palm-sweating choices!
■ More thrills! ■ More enjoyment!

CHOOSE YOUR OWN ADVENTURE®

Four brand new adventures are waiting for you now
Available wherever paperbacks are sold

BANTAM
NEW YORK • TORONTO • LONDON • SYDNEY • AUCKLAND

Capture the Spirit of America's Indian Youth

• From the reigning master of American Indian Art

• Actual size: 8½"
• 24K gold rim

©1986 Artaffects, Ltd.

The legends and customs of America's Indians have long held a fascination for us all. They are a proud people who have great respect for nature and her animals, and who teach their children these same values.

In this fine porcelain, limited-edition plate, Gregory Perillo—one of today's foremost Indian-subject artists—captures the kindred spirit between a young Blackfoot boy and a proud eagle. The exquisite detail in both subjects brings this plate painting to life—depicting the determination and strength these friends share.

Notable History of Appreciation

Perillo's breathtakingly realistic originals have earned sustained praise in the art market, and are so highly sought that they often multiply in value within months. Several of his previous offerings in the limited-edition plate field have seen prompt sell-outs and *secondary market appreciation of up to 746%!*

Now The Hamilton Collection is privileged to offer "Brave and Free," the first issue in *The Pride of America's Indians* Plate Collection—a series of eight plates, each depicting an Indian child and animal from a different well-known tribe. "Brave and Free" is experiencing broad demand as collectors

BRAVE & FREE

by PERILLO

take advantage of this limited opportunity to own an affordable Perillo masterwork.

As an original issue owner, you will have the right—*but not the obligation*—to acquire all the plates as they are issued. Furthermore, under The Hamilton Collection *100% Buy-Back Guarantee*, you may return any plate within 30 days of receipt for a full refund, releasing your series rights.

Each "Brave and Free" plate will be hand-numbered and accompanied by a same-numbered Certificate of Authenticity. Priced at an affordable $24.50, the edition is strictly limited to just a 10-day firing period.

Prompt Response Suggested

But remember—the popularity of Perillo's art and the appeal of this superb plate has resulted in widespread demand for "Brave and Free." So to secure a reservation within the limited edition, you should respond promptly. To avoid any chance of disappointment, order today!

Respond by: August 31, 1987

Limit: Two plates per collector

Please accept my application for "Brave and Free" by Gregory Perillo. I wish to purchase _____ (1 or 2) plate(s) at $24.50 (plus $2.14 shipping and handling) each, for a total of $ _____ ($26.64* or $53.28*), and make payment by:

☐ Check or money order.
☐ Credit card: ☐ VISA ☐ MasterCard ☐ American Express

Acct. No. _____

Exp. Date _____ 22822 BV
002664/005328

Name _____

Address _____

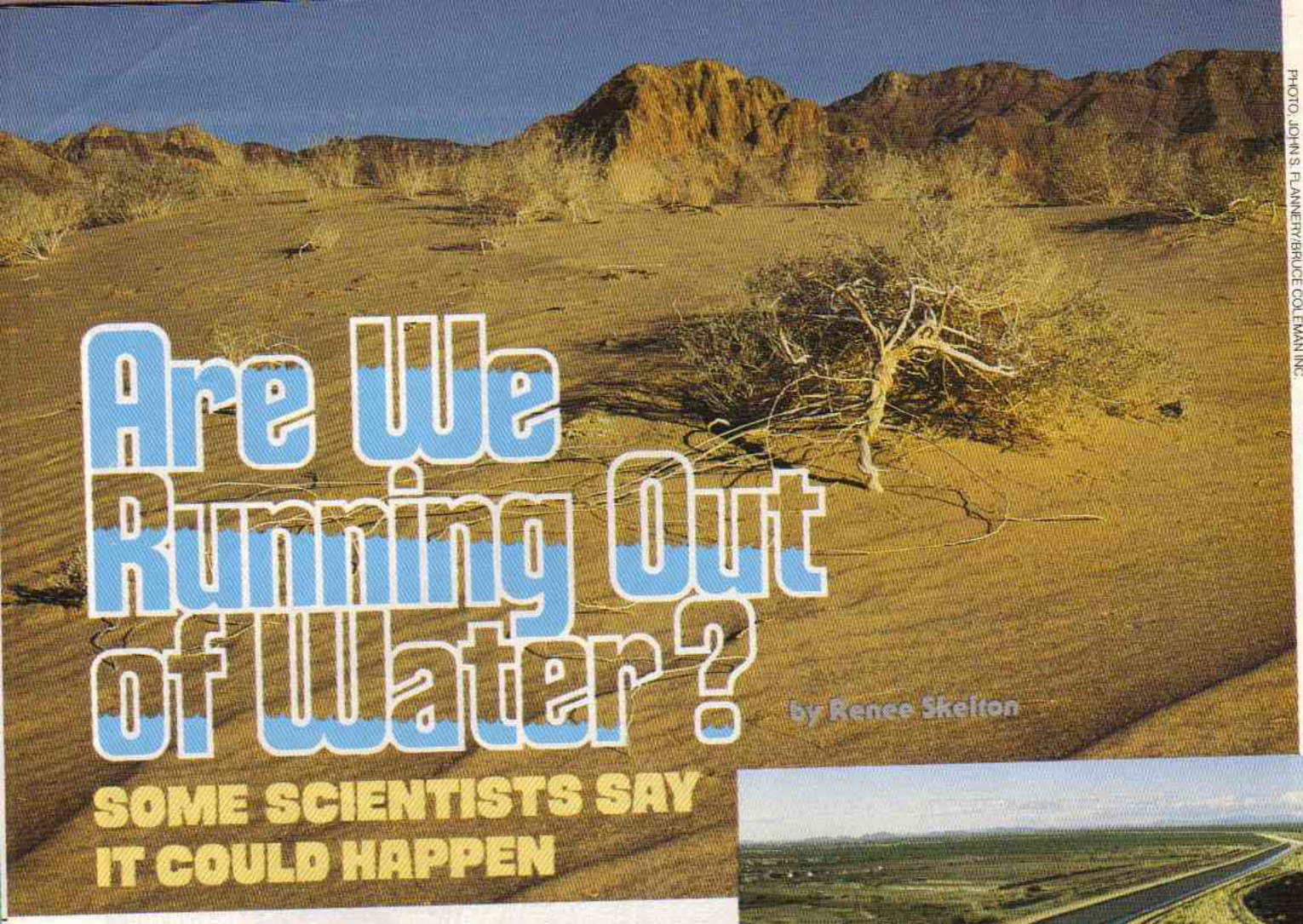
City _____

State _____ Zip _____

Signature _____

***FL residents add $1.34, and IL residents add $1.87 per plate for tax.** *Please allow 6–8 weeks for delivery. All applications must be signed and are subject to acceptance. Deliveries made only to U.S. and its territories.*

The Hamilton Collection
9550 Regency Square Blvd., P.O. Box 44051
Jacksonville, FL 32231



PHOTO, JOHN S. FLANNERY/BRUCE COLEMAN INC.

Are We Running Out of Water?

by Renee Skelton

SOME SCIENTISTS SAY IT COULD HAPPEN

When you take a shower or get a drink, you turn on the tap and find all the water you need. But what would happen if one day you turned on the tap and nothing came out?

Most people haven't thought about that much. Some water experts, however, warn it could happen. They say America is wasting water. The U.S. won't go dry next year—or in the next 20 years. But there are serious water problems showing up all over the U.S. And they need to be dealt with now.

"The threat of running out of water is the most real in the western U.S.," Dr. Mohammed El-Ashry told CONTACT. He is a water resources expert. "If the population continues to increase, and if agriculture uses as much water as it does now, there will be problems."

Much of the U.S. Southwest—including New Mexico, Arizona, Nevada, and southern California—is desert or semi-desert. Each year more people move to this area because of the dry, sunny climate. As the number of homes, schools and factories goes up, so does the need for water.

Visitors to cities in the Southwest often can't tell that these areas are water poor. Residents often plant grass and trees that are native to wetter climates. They build artificial lakes and fill swimming pools with water. They use water as freely as people in wetter climates do.

There is also a lot of farming in the dry areas of the American plains and Far West. Crops can't

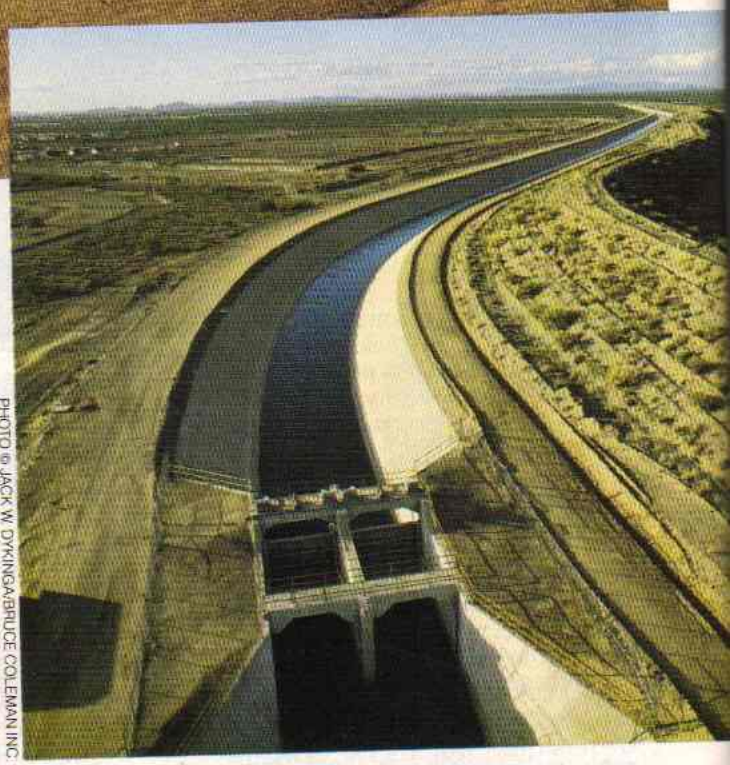
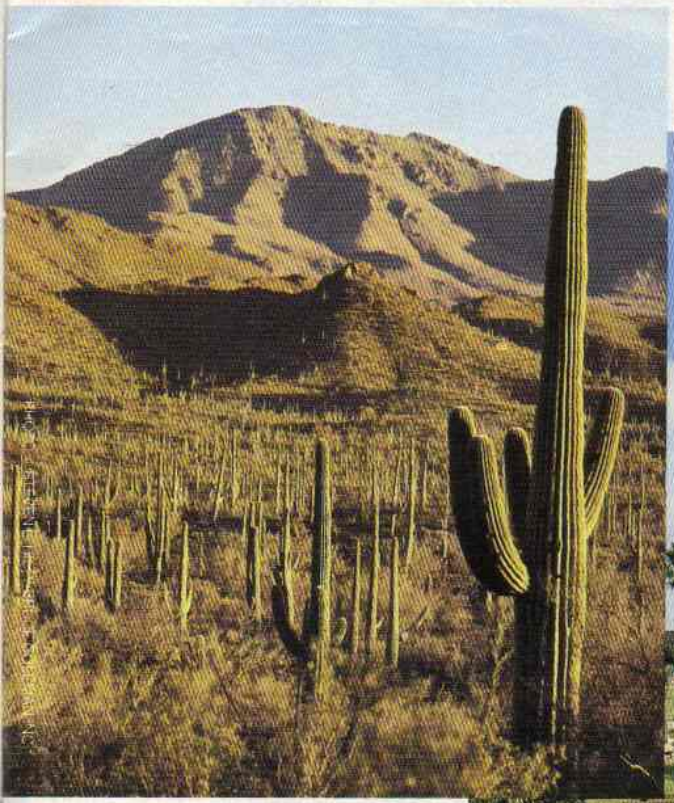
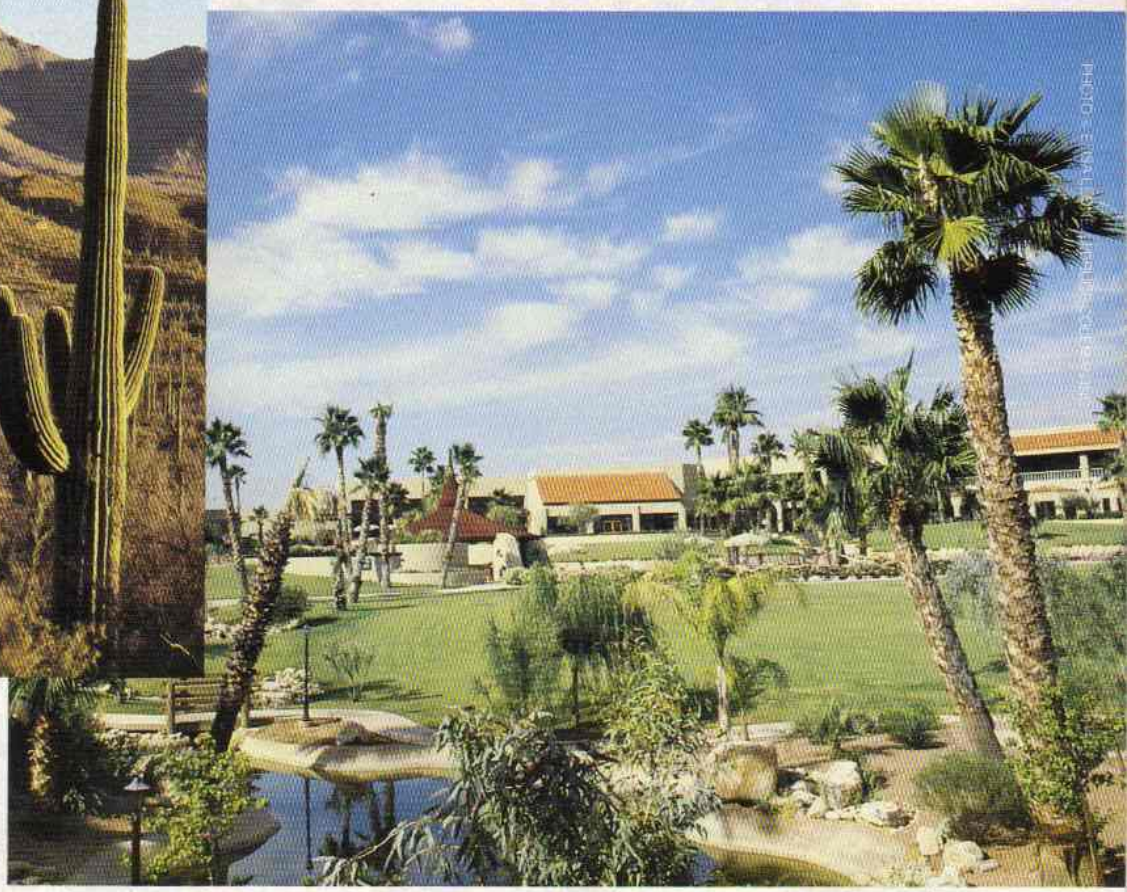


PHOTO © JACK W. DYKINGA/BRUCE COLEMAN INC.

Above: This is part of the Central Arizona Project. By the time it's finished in 1990, it will bring water to dry Arizona valleys.





Above: Saguaro cacti dot the Arizona desert. **Right:** In Arizona cities, heavy watering has turned the dry land green—and lowered the water supply.

grow using natural rainfall alone. So farmers must pump irrigation water onto their fields from underground water sources.

Dr. El-Ashry says that the water is not used efficiently—because it's so cheap. "Water prices are so low that there is no reason to save water."

Phoenix and Tucson are in the Arizona desert. They are now pumping drinking water from deep under the desert outside of town. The water is being used up. It is getting harder and more expensive to pump it up. In some places, so much water has been taken out of the ground that the land over it has collapsed. Huge cracks have opened in the surface. Phoenix and Tucson have had to look farther away to find water.

The U.S. government came to the rescue. It has spent billions of dollars on the Central Arizona Project. The Project reroutes huge amounts of water from the Colorado River to valleys near Phoenix and Tucson. The whole project should be completed by 1990. But where will Phoenix and Tucson look next if more water is needed?

Wet Climates Have Water Problems Too

The water situation is also serious in areas that are not dry. Even wet cities like Boston and New York are looking to add to their water supplies. No one is out of water yet. But that's only because cities keep going farther away to get the water they need. They build new dams. They dig new wells. They change the flow of rivers to bring in new water. But this costs lots of money. It also can damage the environment.

Sooner or later, people are going to run out of rivers to dam and new underground sources to get water from. And people are getting more angry about others collecting *their* water and piping it to a city far away.

In 1985, for example, eight states and two provinces in Canada that border the Great Lakes had their say. People in that area had heard of a plan to build pipes to draw off some of the water in the Great Lakes. They signed an agreement telling anyone who might be thinking about such a scheme to keep away. ➡

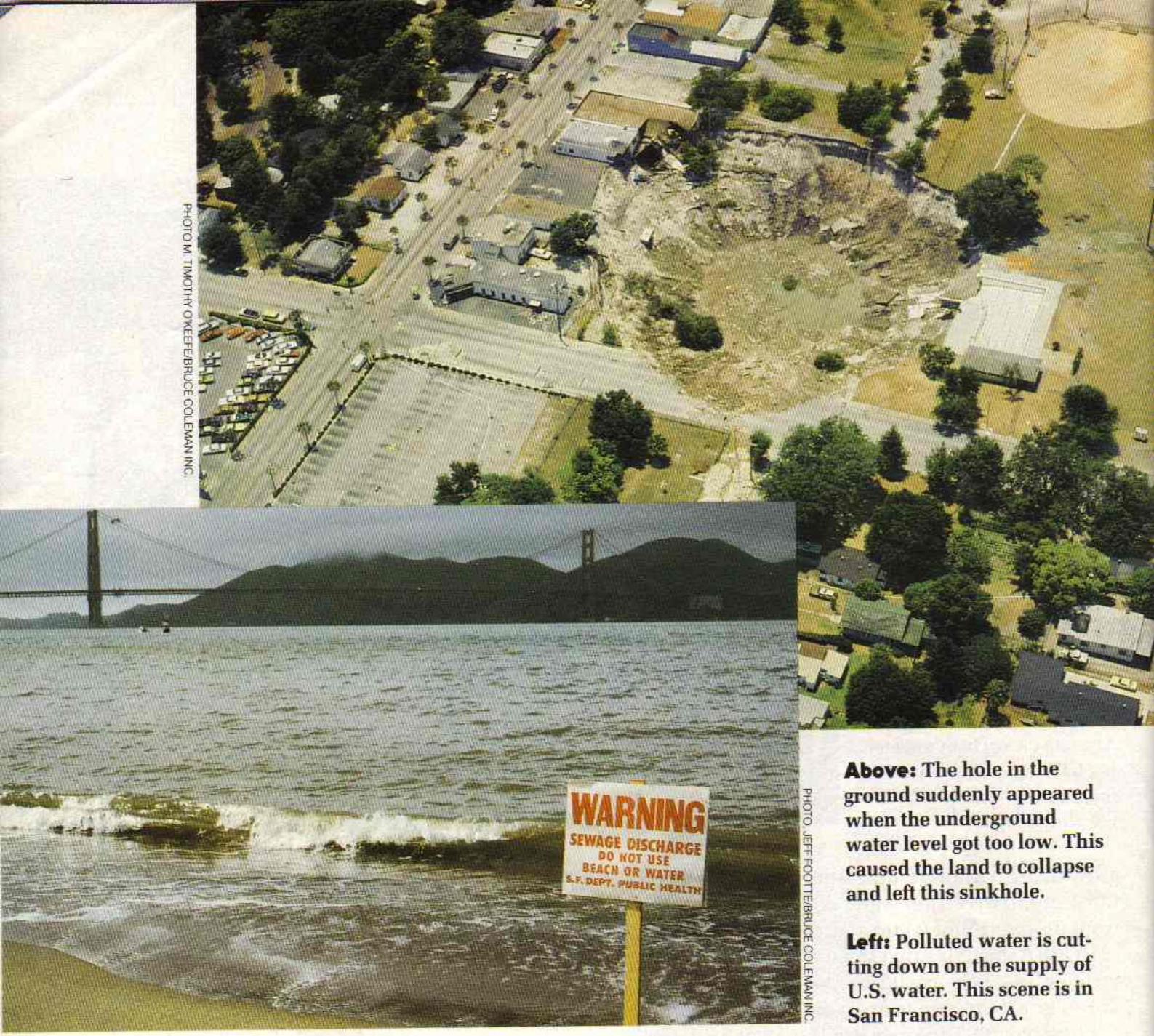


PHOTO M. TIMOTHY O'KEEFE/BRUCE COLEMAN INC.

PHOTO JEFF FOOTTE/BRUCE COLEMAN INC.

Above: The hole in the ground suddenly appeared when the underground water level got too low. This caused the land to collapse and left this sinkhole.

Left: Polluted water is cutting down on the supply of U.S. water. This scene is in San Francisco, CA.

Saving Water

What's to be done? According to Dr. El-Ashry, people living in the Southwest can manage their water more wisely.

"People must realize that they are living in a desert environment," says Dr. El-Ashry. "It just can't look like Kentucky!"

One key is to make sure that residents use water as if it really was a desert. In Denver, for instance, a study showed that homeowners used over half of their water on the grass, shrubs and trees in their yards. Many of these plants were native to wetter areas. So in order to grow, they needed lots of water.

By switching to plants and grasses that don't need as much water, Denver can save as much as half the water they are using now.

Still, the biggest problem remains farming. In the past, people thought nothing of watering dry, desert areas to make farms where they don't naturally belong. In fact, farming uses 80 to 90 percent of the water in desert areas.

According to George Craft, a resources engineer, the kind—and amount—of farming in any area will have to be closer to what the land and climate will allow. Dry lands in the West can still be farm areas, Mr. Craft says. But farmers will have to start growing crops that don't need large amounts of irrigation water.

"People have to live in harmony with their environment," Mr. Craft warns. "The people in

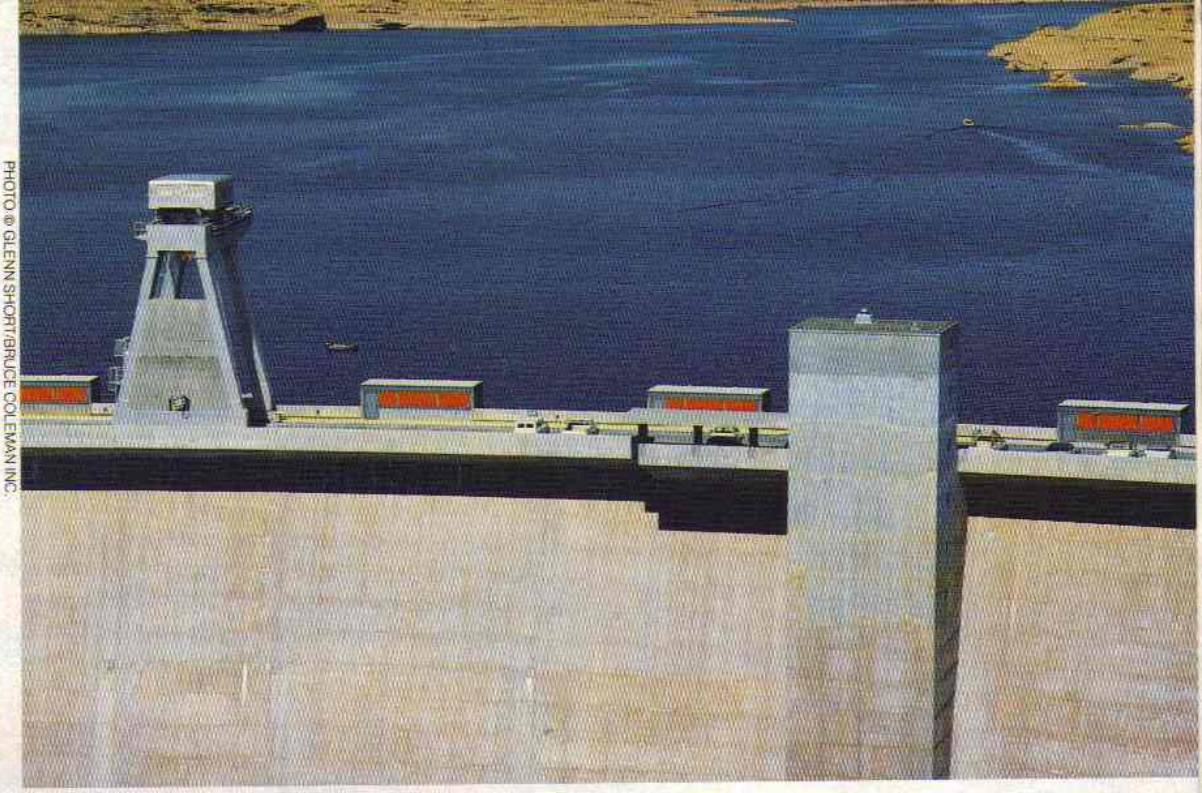


PHOTO © GLENN SHORT/BRUCE COLEMAN INC.

Right: The Glen Canyon Dam in Arizona provides electricity and water to cities and farms in the Southwest.

the western half of the U.S. cannot use all that water to irrigate farms. We need it to drink."

Cleaning Up Dirty Water

The problem in the East and the Midwest is a bit different. "In the East, the water is there," says David Westerling, an engineer who studies how cities affect water supplies. "But I wouldn't say that all of the water is in great shape."

Much of the nation's population is in the East —especially the Northeast and Midwest. Much of the nation's heavy industry is there, too. For a long time, industries have used streams, rivers, and lakes as dumps for chemical wastes. These waters also supply drinking water to cities.

A U.S. law—the Clean Water Act—helped clean up surface waters like rivers and lakes. But over half the people in America get their drinking water from underground. It turns out that old garbage dumps, landfills and leaking barrels let chemicals seep into the ground. This gets into the water that people drink.

Old water systems in many eastern cities also threaten supplies. Boston, for example, loses 40 to 50 percent of its drinking water from leaks in underground pipes.

Water is not something we can just take for granted any more. We have to learn to treat water as the valuable resource that it is. "Whether it's water pollution or water shortages," warns Dr. El-Ashry, "if we don't do something about it, there will be a serious problem. But we still have time."

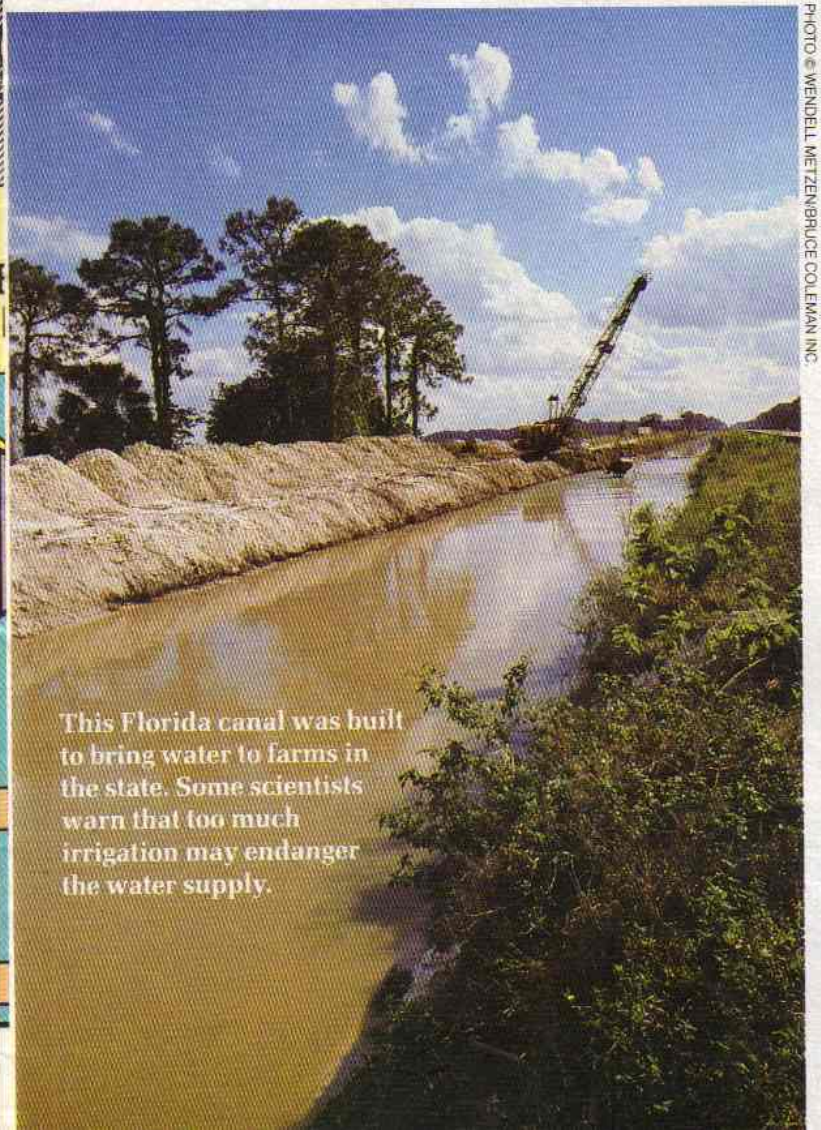


PHOTO © WENDELL METZEN/BRUCE COLEMAN INC.

This Florida canal was built to bring water to farms in the state. Some scientists warn that too much irrigation may endanger the water supply.

ADVERTISEMENT

Kooler News

I didn't Know that!

In an average day of walking, each foot hits the ground over 7,000 times.

You Know You're Kooler When...

you finally ask someone you have a crush on to go to the dance and they say yes.

Mail us your ideas!

Kooler Kids

Rudy Wolfgramm is 17-years old. He plays drums for the Jets, a pop band made up of eight brothers and sisters. Rudy loves to dance, but when you play the drums, you don't get to do much dancing. So Rudy teaches everyone the steps the Jets use in concerts. When he's not working, Rudy likes to read books about astronomy. If he wasn't in a pop band, he'd be a rockin' astronomer.

If you're a Kooler Kid or know of one, send us your photos and letters.

Kooler Moments in History

The Jets had played some pretty important concerts and had a Top Ten single when they got an invitation from the White House. Their parents, Mike and Vacca Wolfgramm, manage the band, hire tutors and take care of six more children at home. The Jets work hard and they are fun to be with. They were proud to play at the White House. President Reagan wasn't home that day. "He sure missed a great concert," said the Jets.

ADVERTISEMENT

Ask Dr. Know

Dear Dr. Know,

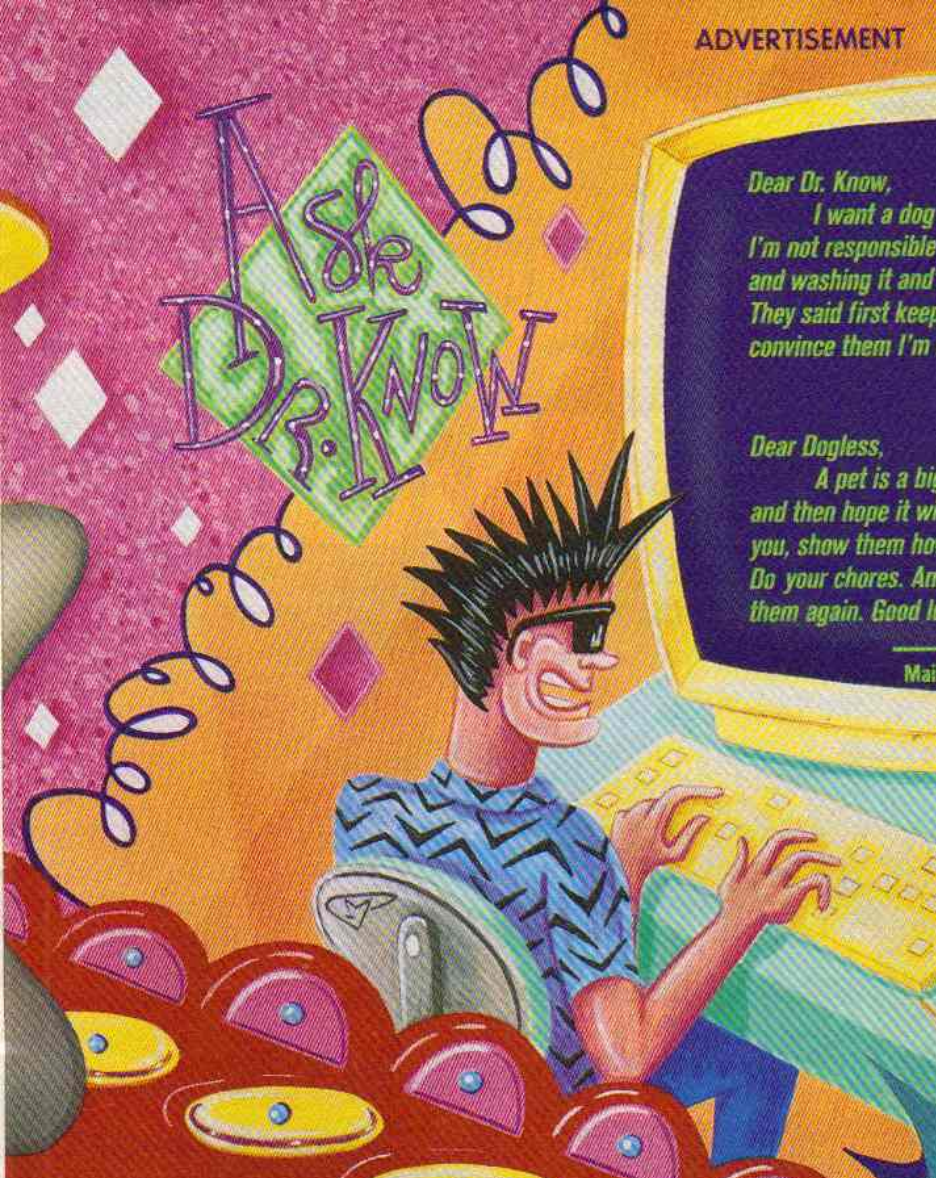
I want a dog but my parents won't let me have one. They say I'm not responsible enough. They say they would end up feeding it and washing it and taking it for a walk. I told them they were wrong. They said first keep your room neat, then we'll see. How can I convince them I'm ready for a pet?

Your friend,
Dogless

Dear Dogless,

A pet is a big responsibility. You can't just feed it for a while and then hope it will feed itself. If you want your parents to believe you, show them how responsible you are. Keep your room neat. Do your chores. And after a month of the new improved you, ask them again. Good luck and name your dog Dr. Kool.

Mail your Kooler questions to Dr. Know.



Hey Kids

Make it Kooler!

with

Kool-Aid™ Koolers JUICE DRINK

GENERAL FOODS

Send your photos and letters to:

General Foods Promotional Services Center
Kooler News, P.O. Box 4810
3 Stuart Drive
Kankakee, IL 60902

Illustration & design: Mike Pomuso

All letters and photos become the property of General Foods and cannot be returned. You and your parent/guardian will be asked to sign a release form for any letters and photos selected for publication.

1987 © General Foods

REEF RESCUE SQUAD

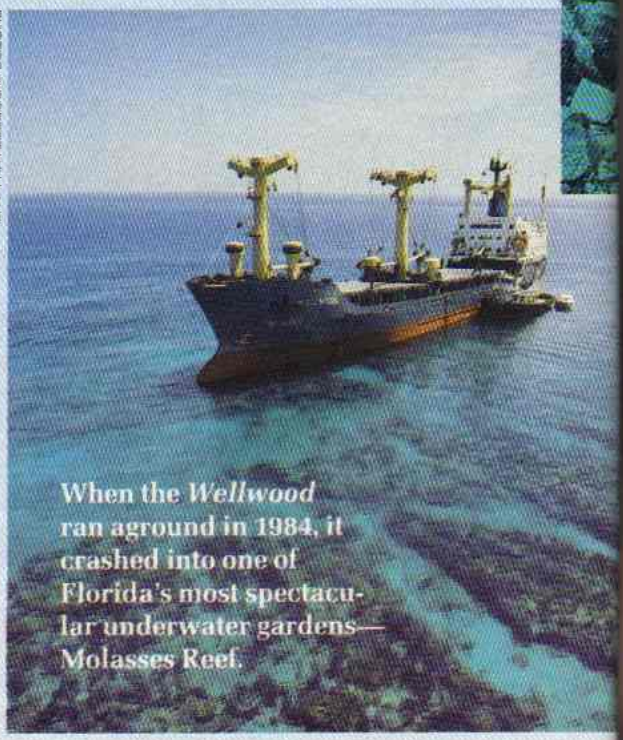
REPAIRING AN UNDERWATER WORLD

by Ellen R. Mednick

It was a hot August day in 1984. Just off the southern tip of Florida, a 400-foot freighter strayed off course. The ship, the *Wellwood*, ran aground on a reef. It crushed everything in its path—including part of an underwater coral garden called Molasses Reef.

Molasses Reef is one of the most popular spots in the Key Largo National Marine Sanctuary. The underwater park is a treasure trove of sea creatures and beautifully shaped coral. The destruction of a large section of the reef upset many scientists, including John Halas. He's the chief marine biologist at the Key Largo Sanctuary.

Halas was already worried by damage to the coral from small boats and divers. Now, with the destruction of the reef by the *Wellwood*, scientists decided to see if the coral could be rescued. "The ship had damaged an area the size of a football field," Halas told CONTACT. "We knew something had to be done fast."



PHOTOS © ROBERT HOLLAND

When the *Wellwood* ran aground in 1984, it crashed into one of Florida's most spectacular underwater gardens—Molasses Reef.

Reef Repair

For two long weeks, the *Wellwood* remained stuck on the reef. Finally, Coast Guard tugboats pushed the freighter into deep water. But moving the ship damaged the coral even more.

As scientists studied the reef, they discovered that much of the coral had been damaged by the *Wellwood*. They realized that they couldn't bring the reef back to life immediately.

A coral reef may seem like piles of dead stones and rocks, but it's really made of the shells or skeletons of millions of tiny animals. These creatures are called coral animals or polyps (POL-lips). Each is about the size of a pencil eraser. As the coral polyps grow, they build new skeletons on top of the old, forming a reef. The process can take thousands of years.

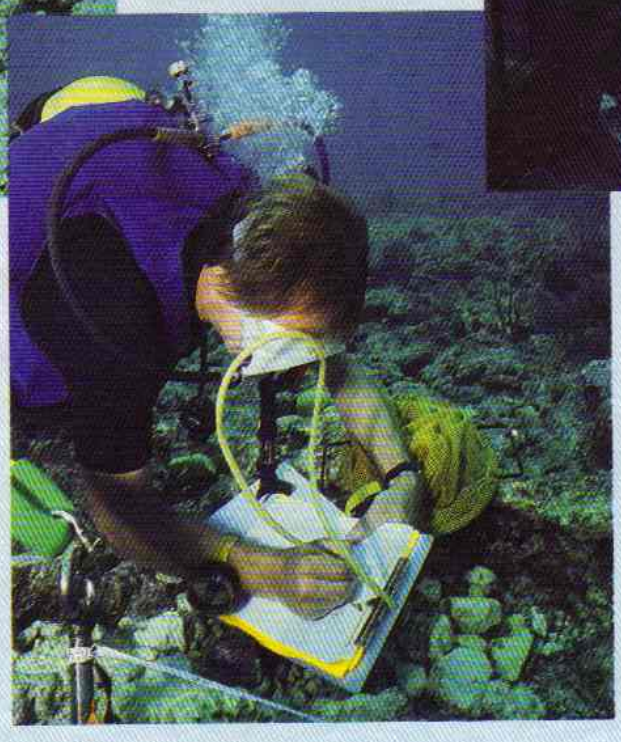
A reef may be thousands of miles long and weigh several tons, but it is very fragile. So the scientists studying the accident had several problems to solve. If the reef could be saved or repaired, how long would it take? Would the coral reef heal itself? And most of all, how could scientists help in that healing process?

Ralph Lopez, a scientist who studies the oceans, organized a team of scientists to study the damaged reef.

"When the accident first happened, I didn't think anything good could come out of it," Lopez told CONTACT. "The coral's so delicate that even the touch of a finger will kill it. So you can imagine what the ship did. Broken pieces of coral were everywhere. But now I realize the accident gave us the opportunity to research and examine coral reefs to see how they work to repair themselves." ➡

Above: Once the ship was removed, the damage to the reef became clear. Parts of the reef looked as flat as a parking lot, filled with rubble.

Right: An expert scuba diver, John Halas, used a special camera to videotape the scarred reef. Then he placed yellow markers to help scientists on future dives locate the damage.



Right: Just after the accident, marine biologist Walter Japp collected research information and mapped out the damaged area.

PHOTO: CARL ROESSLER/FPG INTERNATIONAL

Algae Glue

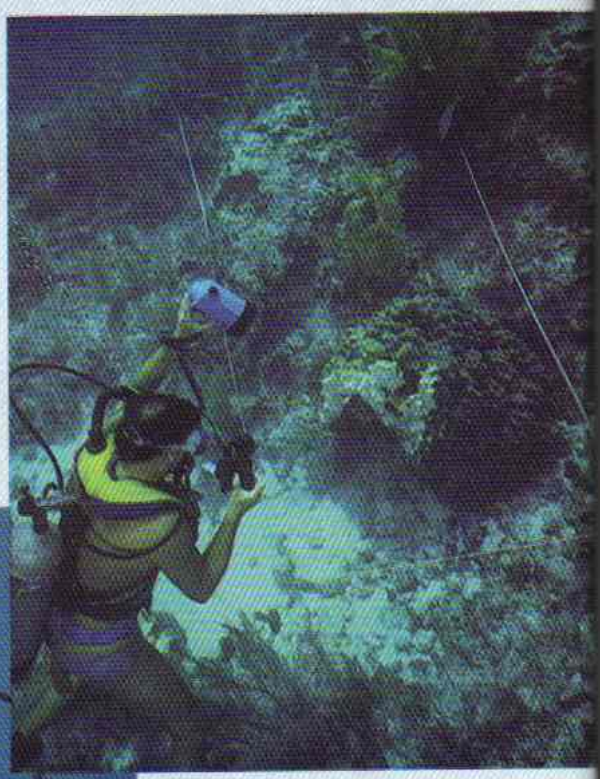
It was John Halas's job to investigate the damaged coral. Wearing scuba gear and using a special camera, he dove underwater to check the site. First, he videotaped the area that was hit. Then he placed stakes where the ship had landed and mapped out the area. "It looked just like a bulldozer plowed through the reef," he told CONTACT.

The next step was to try and rebuild the reef by putting together as many of the broken pieces of coral as possible. Using special hammers and pulleys, scientists pulled up giant coral heads that had broken off and were lying on their sides. Then divers turned the coral upright.

Halas worked with marine biologist Harold Hudson to find ways to put the broken pieces of coral back together. They used a special glue, invented by Hudson, that would work in water and dry quickly. Slowly, the two scientists began to rebuild sections of the reef by carefully gluing broken pieces onto living coral.

"We thought mother nature could use all the help she could get," Hudson explained. Actually, Hudson got the idea for the cement from nature itself. "In the sea, there's a kind of algae that gives off a substance just like this glue." By mending the pieces, the scientists hoped to give the coral a chance to grow again.

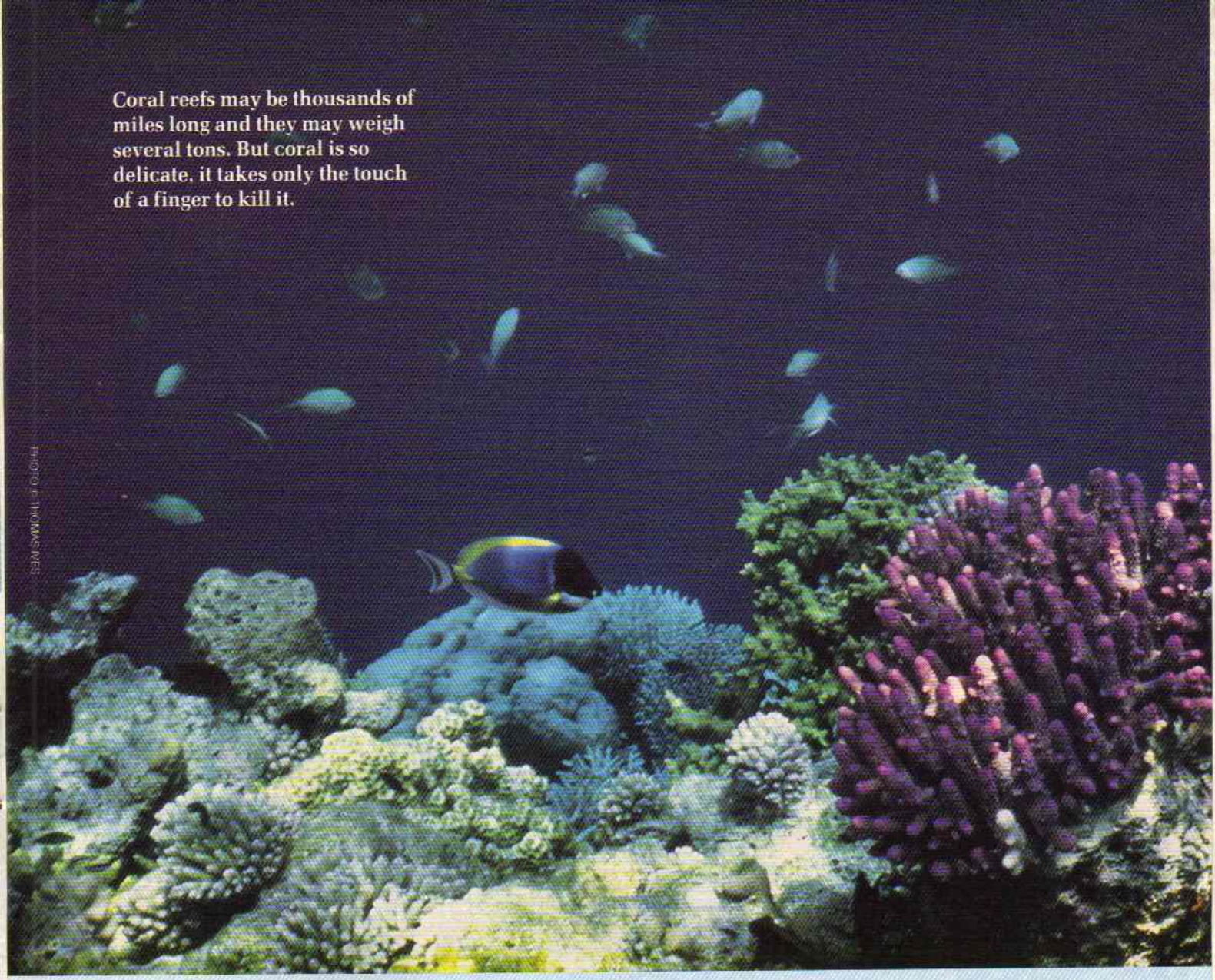
Left: Scientists tried to rescue corals that might be saved. Here, they struggle to turn a large coral head upright.



Right: To help the coral to heal itself, John Halas glued broken pieces of pillar coral back together. Two months after the repairs, the coral had already begun to grow again.

Above: Reefs are alive with countless fish and algae. To track the return of sea creatures to Molasses Reef, scientists photographed and studied the reef closely.

PHOTOS © ROBERT HOLLAND



Coral reefs may be thousands of miles long and they may weigh several tons. But coral is so delicate, it takes only the touch of a finger to kill it.

PHOTO © THOMAS IVES

A Home For Fish

Reefs are full of life. They aren't just bare rocks in the sea. Reefs are alive with countless families of fish and plants—especially algae. Coral needs algae to live. Without the nutrients which the algae provides, the coral reef becomes weak and colorless. A healthy reef becomes a feeding ground for fish. Then when the fish and plants die, their shells and remains become part of the reef.

The coral, fish and algae all need each other in order to live. The three fit together—just like puzzle pieces. One change can create a problem. So the destruction of Molasses Reef also meant the disappearance of fish and plants that use it as home.

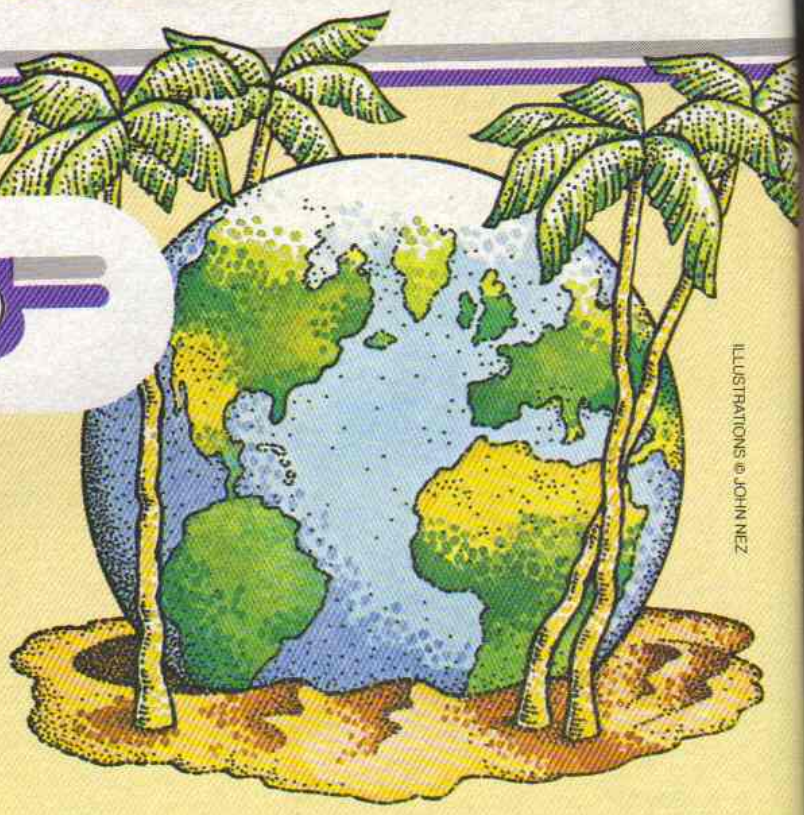
To track the return of fish and algae, scientists photographed and studied the reef closely. Using special cameras and computers, a team from Texas A&M University checked the surface of Molasses Reef weekly. Then they analyzed the photographs in the laboratory.

The photographs show that little by little the reef *is* recovering. New coral is starting to grow in the area where the ship landed. Richard Barnett, one of the scientists, told CONTACT: "We're almost sure the reef will recover. But it will take 50 years or more for the reef to repair itself and it must be treated very carefully." And no one knows for sure if Molasses Reef will ever fully recover.

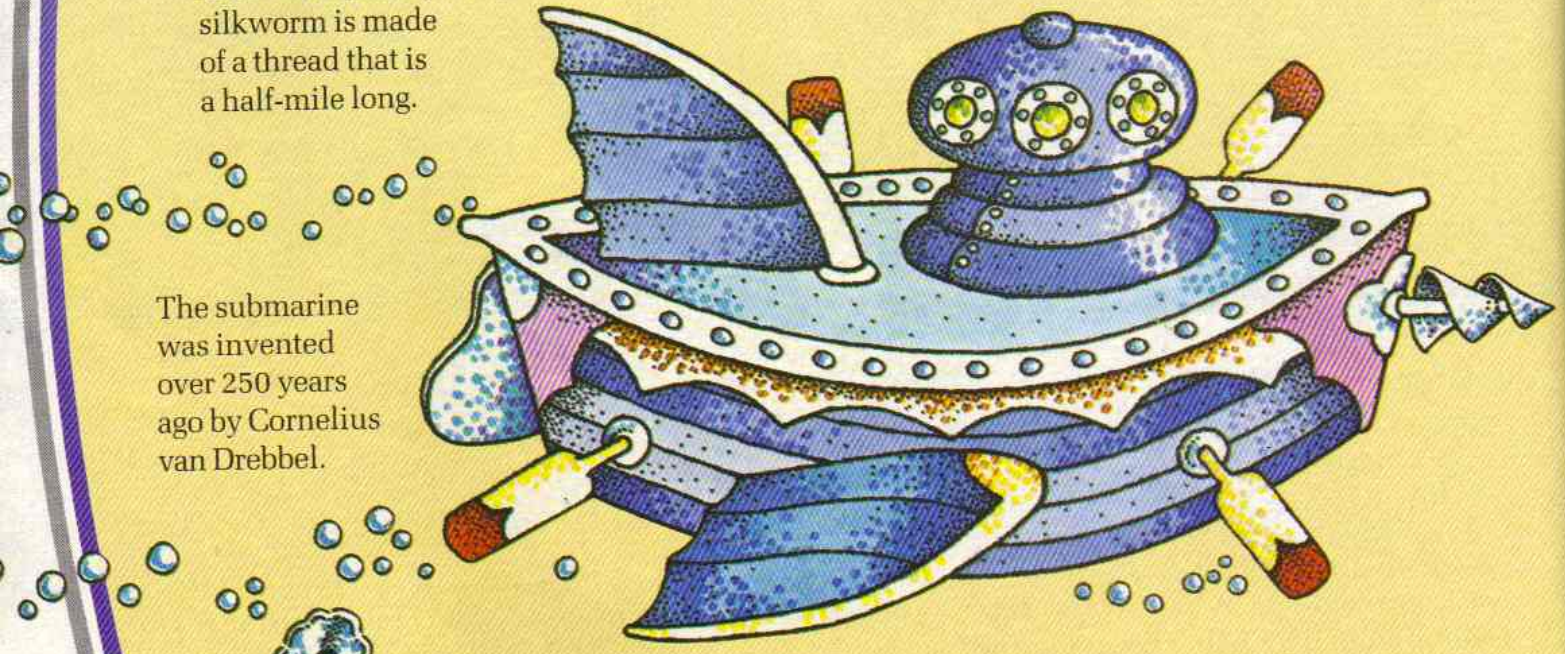
"There are no easy solutions," John Halas says. But with the help of a dedicated group of scientists, Molasses Reef is getting another chance at life.

Factoids

A cocoon spun by a silkworm is made of a thread that is a half-mile long.



Nearly one third of the Earth's land is covered by deserts.



The submarine was invented over 250 years ago by Cornelius van Drebbel.

The United States produces 62 billion cans every year.

ILLUSTRATIONS © JOHN NEZ

You have about 10,000 taste buds in your mouth and throat.

Natural vanilla comes from beans which grow on orchid plants.

Starfish have been found that have as many as 25 arms.

Any Questions?

by Renee Skelton

ILLUSTRATIONS © BOB DELBOY

Does listening to music with headphones cause damage to your ears?

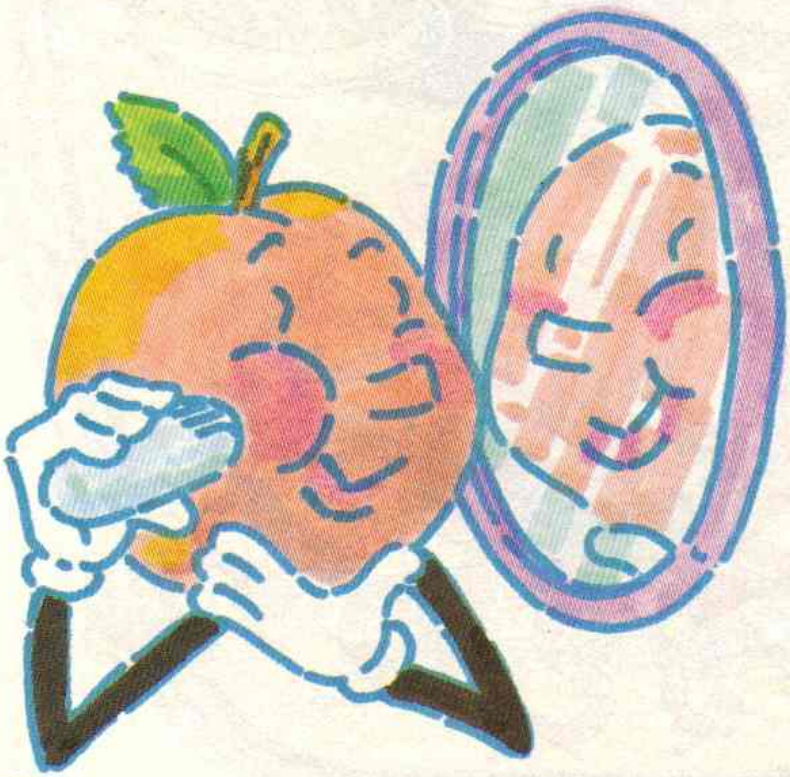
Not always. But if you listen to music with the volume way up, the chances of damaging your ears are greater with headphones. That's because the loud sound is closer to your ears.

Sound is measured in decibels (DESS-uh-bells). The softest sound most people can hear is one decibel. Leaves rustling on a tree measure five decibels. The sound of a jet taking off averages 120 decibels.

Music from your stereo speakers can be loud as well. With headphones, there is almost no space between the sound and your eardrums. So sounds pound straight into the ear.

If you really crank up the volume, your ears could be exposed to dangerous levels—over 100 decibels. Listening to music at that level for a long time can cause hearing loss. So make sure you don't have the volume way up—ya' hear?

Question sent in by Kristen Keckly, Hartsdale, NY



Why do peaches have fuzz?

Scientists think peaches developed fuzz as a kind of protection for the fruit. After all, peach skin is pretty delicate. It's not thick like the skin of a banana. It doesn't have a protective waxy coating like an apple. So all of those fuzzy little hairs could be an extra barrier to keep the peach safe from harm.

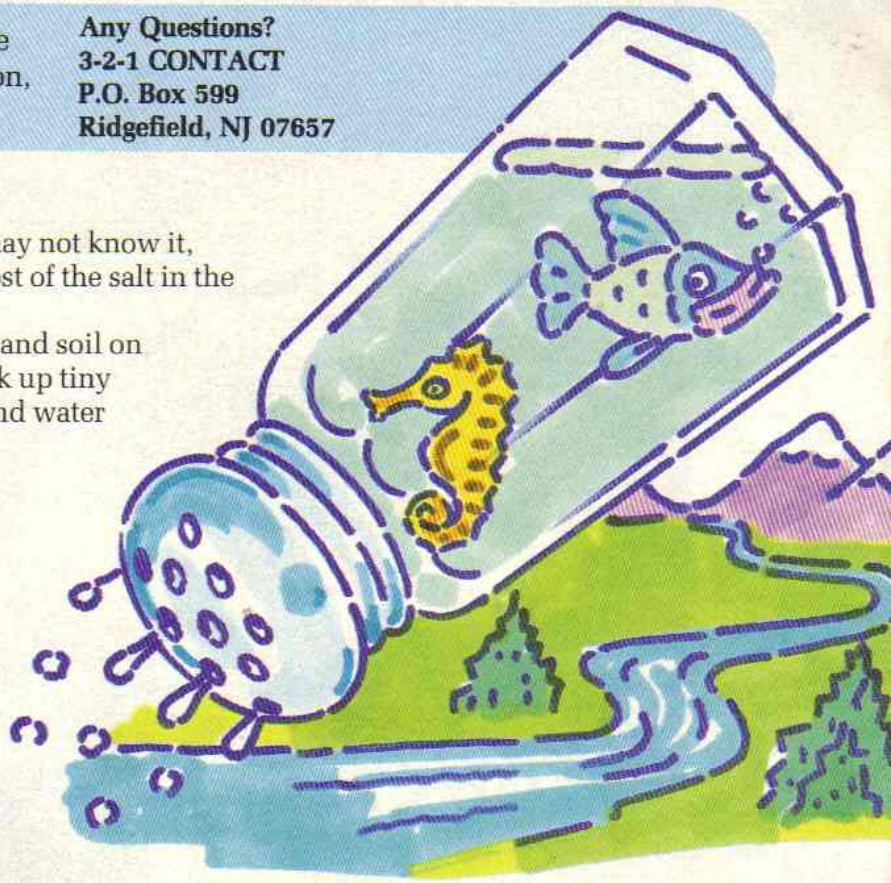
Peach fuzz hairs are called trichomes (TRY-combs). Though no one is sure, scientists think the fuzz may help trap small insects and bacteria. This may help protect the peach from certain diseases. Or the fuzz may hold warm air and extra moisture near peach skin. This may help the fruit when it's cold or very dry.

So thanks to the fuzz in the fruit, peaches have survived since they were first grown in China thousands of years ago. You might say peach fuzz was the original peachy idea!

Question sent in by Melanie and Steven Damron, Dayton, OH

Do you have a question that no one seems able to answer? Why not ask us? Send your question, along with your name, address, and age, to:

Any Questions?
3-2-1 CONTACT
P.O. Box 599
Ridgefield, NJ 07657



Why is the ocean salty?

You may not know it, but rivers are salty, too. In fact, that's where most of the salt in the ocean comes from.

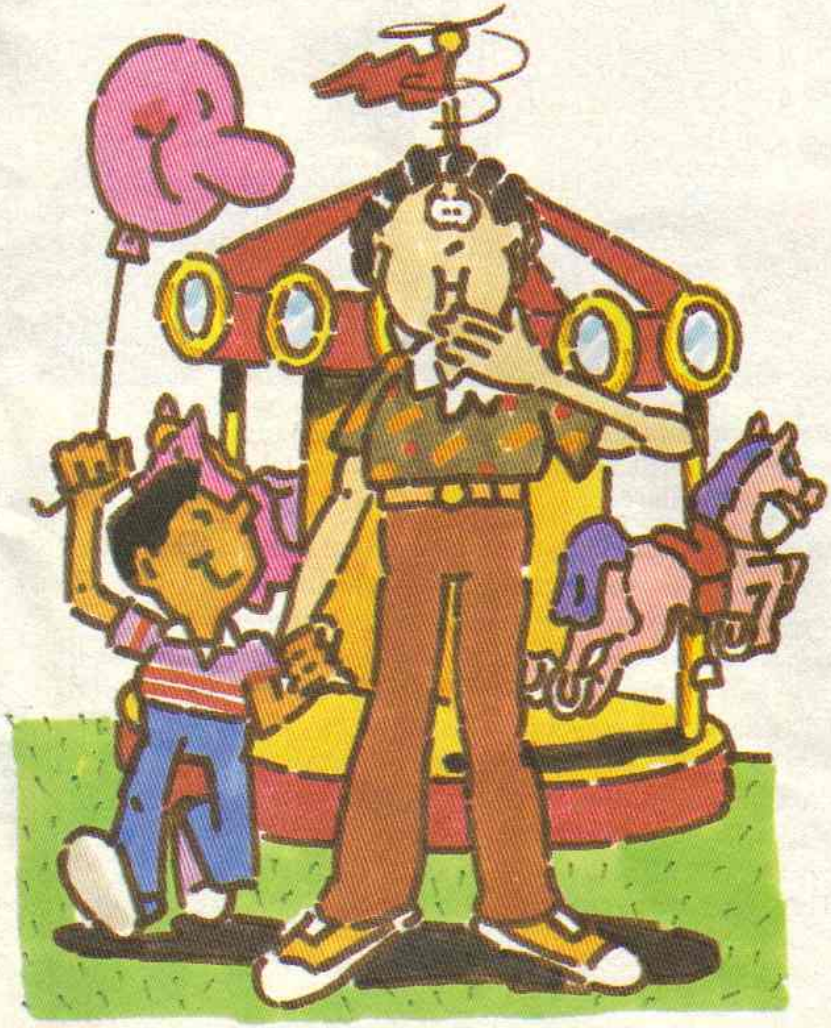
Here's how it works. Rivers wash over rocks and soil on their way to the ocean. When they do, they pick up tiny amounts of salt. These rivers dump their salt and water into the ocean.

Wait a minute!, you say. That doesn't explain anything! Oceans are *much* saltier than the water pouring in from the rivers.

That's right. But you have to take into account *evaporation*. The sun shines on the oceans and water evaporates. But the salt stays behind. After millions of years, all that salt adds up.

All kinds of plants and animals live in the ocean. But when water gets too salty, nothing can live in it.

Question sent in by Mike Bricher, Chesterton, IN



Why do we get dizzy?

Keeping your balance might seem like a job for your feet and arms. But it's really a job for your ears.

Everyone knows that ears help you to hear. But one part of your ear—the inner ear—helps you to keep your balance. The inner ear has three tubes in the shape of half-circles. Each is filled with fluid and little hairs. These hairs are connected to nerve cells. When you walk or run, the liquid moves, wiggling the hairs inside the canals. When the hairs wiggle, they send messages to the nerve cells, telling your brain which way you are going.

But when you spin around fast, the liquid in the canals sloshes around in all directions. Your brain gets confusing signals. It doesn't know which way you're moving. So you get dizzy. When you stop spinning, the liquid is still sloshing around. So your brain thinks you're still moving. You stay off balance, even though you're standing still. Now isn't that an earful?

Question sent in by Andrea Langenbruch, Richmond, KY

Wet & Wild!

RAFTING BRINGS YOU CLOSE TO NATURE

by Russell Miller

It's one wild ride—a wet and wonderful roller coaster journey through burbling, bubbling, roaring white water. Your stomach jumps and falls as you bounce up and down, holding fast to a life-rope.

That's river running, and it's gaining fans in a big way. In fact, a recent U.S. government study found that 35 million Americans have ridden rafts through white water—the frothy mixture of water and air that's part of many rivers.

Whitewater rafters float through unspoiled country—without harming nature. Most river runners paddle downriver on rafts guided by whitewater experts. Newcomers can learn how as they paddle along. If you can swim and you have a sense of adventure, you're ready to run a river.

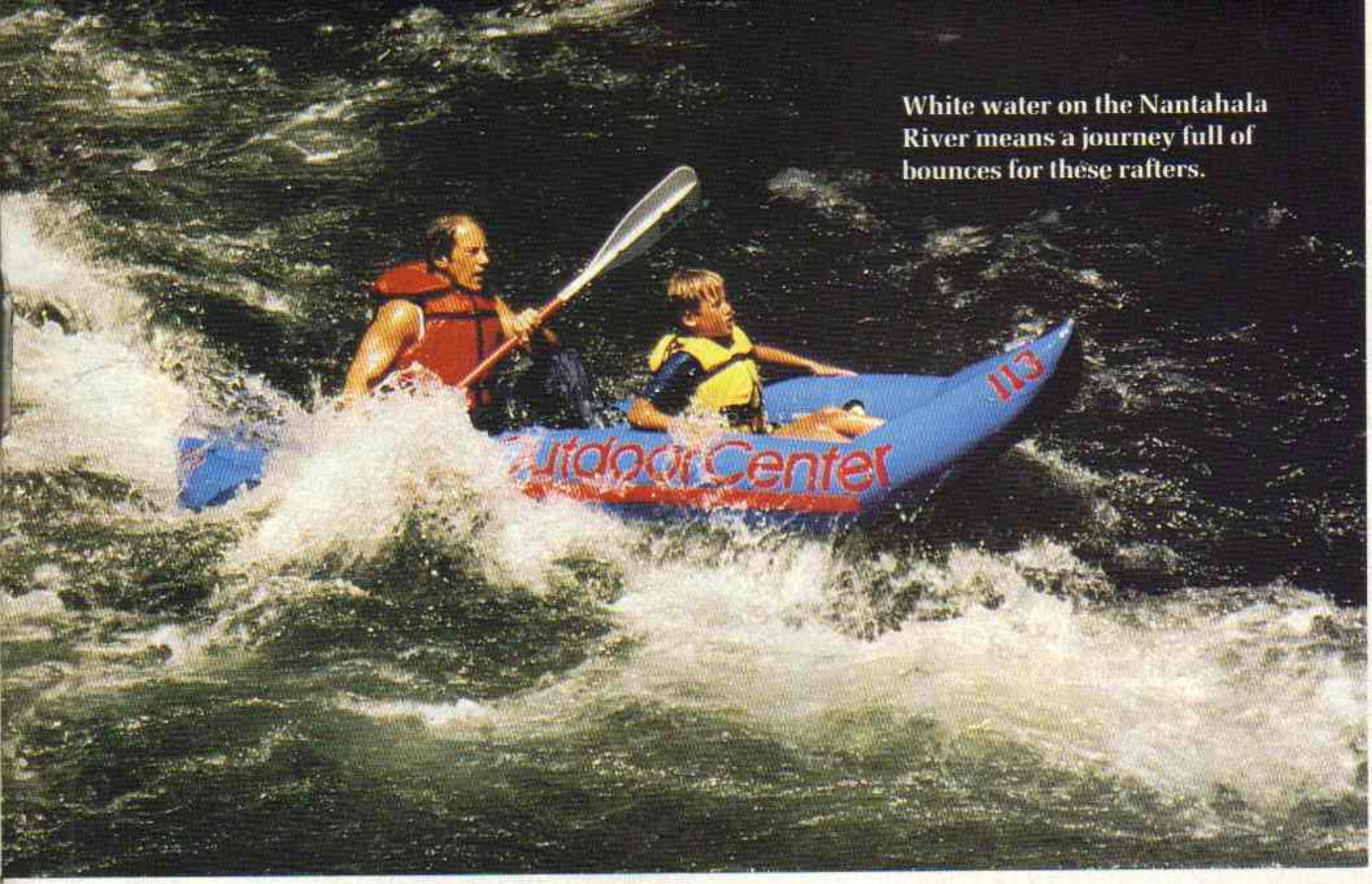
That's what Shana Allred-Ageloff, 8, of West Kingston, Rhode Island found out on a five-day trip down the Green River in eastern Utah. To get there, Shana and her parents flew in a tiny six-seat plane.

The Ageloffs landed as their 19 companions for the 84-mile river trip were stepping off other small planes and heading down a steep trail to the Green River. Below, at the river's edge, were five river guides and five bright orange blobs—the rubber rafts that would carry the voyagers deep into the Western wilderness.

PHOTO: RUSSELL MILLER

Above: **Rafters on the Green River can help row the raft. Here, Shana Ageloff and her father take their turn at the oars.**

It wasn't long before the packs, the tents, the food and the cooking gear, all wrapped in waterproof sacks, were securely lashed to the rafts. Then—splish, splash—everybody stepped into the river and pulled themselves onto the rafts. With a few strokes of the oars, the river guides turned the little rubber boats into the current. They were off to ride rough water.



White water on the Nantahala River means a journey full of bounces for these rafters.

PHOTO, CIRO PENA–INOC

"I was a little nervous," recalled Shana. "I wasn't sure what the rapids would be like." To her surprise, the river was as peaceful as a lake, at least for the time being! That's what river runners call "flat water." In fact, most of the water rafters see is flat. White water—the most exciting part of the river for rafters—comes up only at certain points.

Why So White?

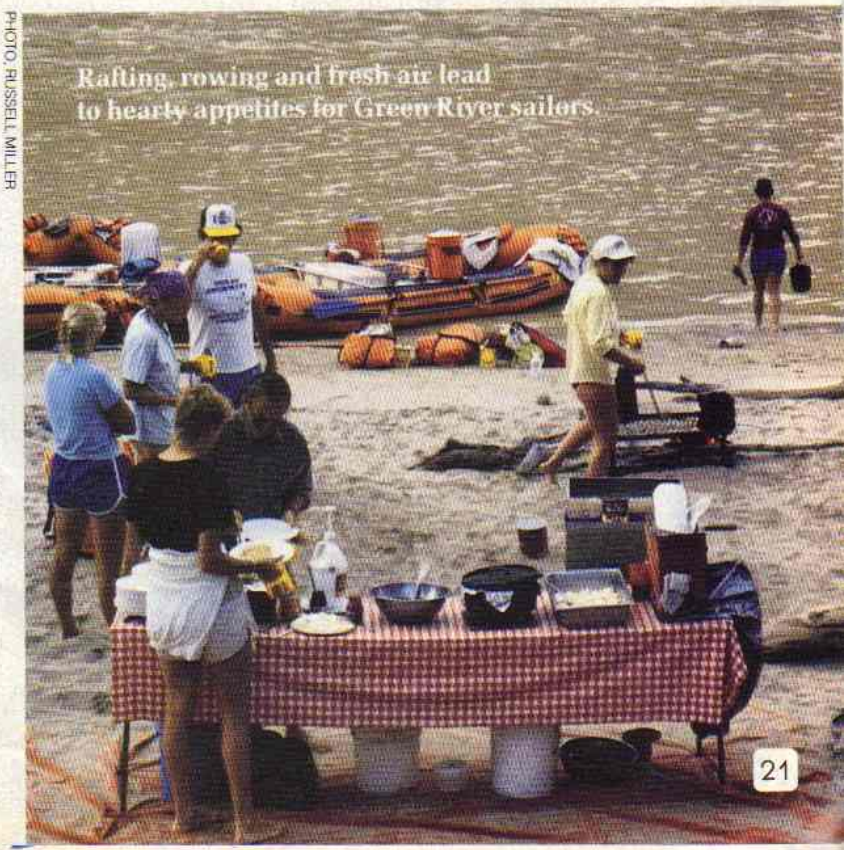
The "where" and "why" of white water make plain scientific sense. Rivers flow downhill. Gravity pulls the water along smoothly. But every once in a while, something gets in the way. It could be a huge boulder that's fallen in the river, or a whole lot of smaller rocks. It could be a spot where dirt and rocks have started to pile up.

When something does get in the way of all that smoothly flowing water, watch out! Maybe the water will splash up and mix with some air. That could create a "pillow"—a pile of foamy water. A pillow isn't dangerous itself, but warns river runners there's a dangerous rock sticking out of the water just ahead.

Maybe the block in the river will be big enough to turn water back upstream. A spot like that, called an "eddy," makes life tough for a river runner trying to paddle downstream.

Maybe a pileup of rocks on both sides of the river will force all the water into a narrow, swiftly moving channel—a "chute." River runners have to spot the start of the chute and steer into it if they don't want to run aground. If they do catch the chute, they're in for a wild ride to the other end.

Or maybe there are just lots of rocks of all different sizes spread across the river bed. ➡



Rafting, rowing and fresh air lead to hearty appetites for Green River sailors.

PHOTO, RUSSELL MILLER

The water pounds and bounces and plunges and hops across them. That's a "rapid," and it's the part of the ride river runners like best.

"Going through the rapids was the best part," said Shana. "It's fun to sit in the front of the boat. That's where you get the best bumps when you hit big waves and stuff."

Practice, Practice, Practice

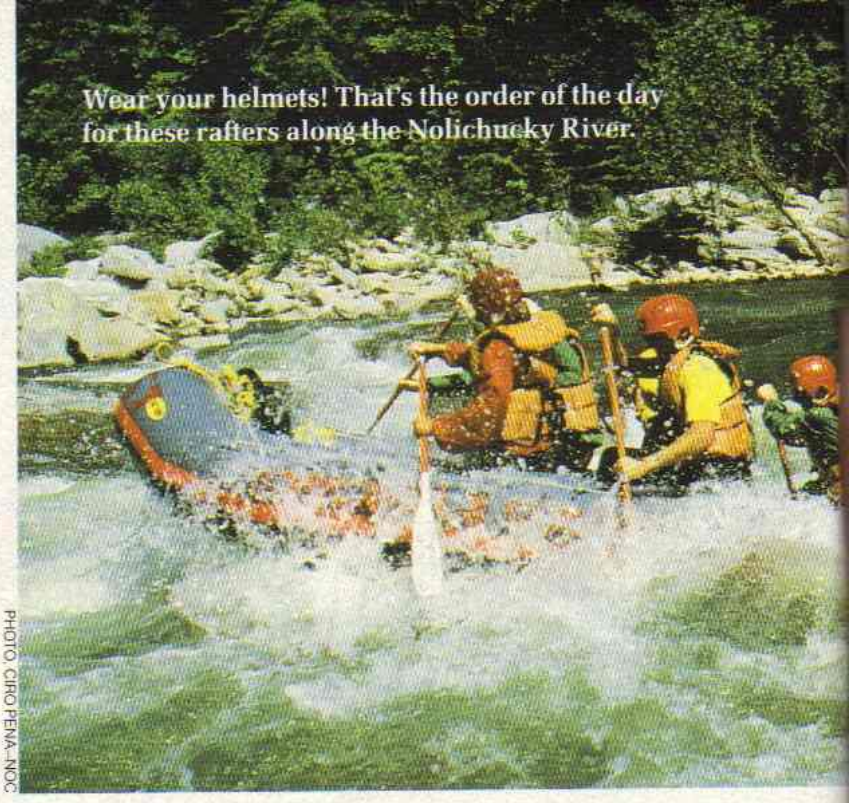
Steve Olson, the river guide on Shana's raft, had already run the Green River 11 times. He knew where the rapids were, and he knew how to approach them. How did Steve learn the river so well? Practice. "There's no book to read," he said. "You just learn from the experience."

No matter how much experience a guide may have, there are always surprises in store. Those surprises may include flipping over into the rushing river. "There are two kinds of guides—the ones who have flipped and the ones who will," laughs Steve. That's why river runners tie down all their belongings, and that's why they wear life jackets.

Floating Into History

As Shana, her parents, and their rafting companions rowed through the deep wilderness of the Green River, they saw a world of dam-building beavers, swooping blue herons and shy mule-deer. They drifted past carvings left on stones by fur-trappers, frontiersmen and ancient Native American settlers. They got glimpses of 100-year-old hideouts of Wild West outlaws and floated past the ruins of barns built by ranchers who tried to tame the canyon. At night, they stared dreamily at the skies packed with stars and listened to the perfect quiet that stretched for hundreds of miles.

For Shana, though, the sights and sounds of the wild were just interesting extras. Like thousands of river runners before her, she'd caught the white-water bug. "The best part," she said, "was going through the rapids."



Wear your helmets! That's the order of the day for these rafters along the Nolichucky River.

PHOTO: CIRO PENA–NOC

River rafters get to see nature up close. Here, voyagers on the Green River drift through Utah's Desolation Canyon.

PHOTO: RUSSELL MILLER

What Do You Know About Water?

A CONTACT QUIZ

By Jonathan Schwartz

Summer is here. That probably makes you think of hot, sticky weather. But you should also think about water. After all, that wet stuff is an important part of summer. Chances are, you will spend at least part of your vacation splashing around in a lake, ocean or swimming pool. You probably know all about water. Or do you? On this page are eight questions about water. Try to answer each one. But be careful. Some of them are pretty tricky!

1. It is easier to float in fresh water than in salt water.

True or False?

2. Pollution can make rain water harmful.

True or False?

3. Chlorine in swimming pools helps keep you healthy.

True or False?

4. Most people use a gallon of water to brush their teeth.

True or False?

5. Sometimes water can go up trees.

True or False?

6. Camels can go without drinking water longer than any other animal.

True or False?

7. Your sweat makes you cooler.

True or False?

8. It is possible to get natural soda water from underneath the ground.

True or False?

Answers on the next page.

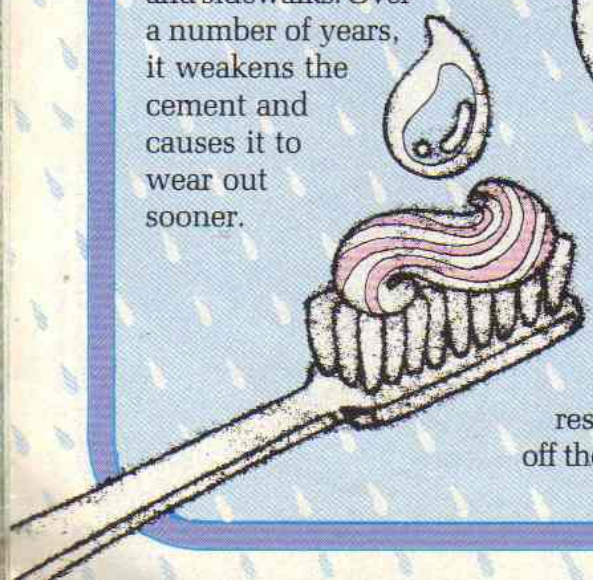
ILLUSTRATION © BARBARA HAMLIN

1 False In fact, it's easier to float in salt water. Try this experiment. Drop a hard boiled egg in a jar of plain water. It sinks. Now add a lot of salt. The egg floats to the top of the jar!

When things are put in water, their weight pushes them down. At the same time, the water is pushing up. If the water pushes with equal force, things float. When water has salt in it, it is more tightly packed, more *dense*, than fresh water. It is better able to hold things up. That makes floating easier.

2 True Walking in the rain isn't what it used to be. Pollution fills the air with an invisible gas called sulfur dioxide. This gas combines with water in the air to form *acid rain*. In some parts of the country, this rain is collecting in lakes. There, it kills the baby fish and the plants they eat. Soon there won't be any more fish in these lakes. Acid rain can also damage buildings and sidewalks. Over a number of years, it weakens the cement and causes it to wear out sooner.

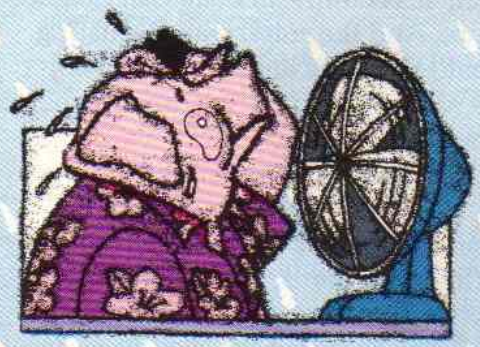
3 True If you swim in a pool, you know about chlorine. This chemical makes a pool smell the way it does. It also makes your eyes bloodshot when you open them under water. What is healthy about bloodshot eyes? Nothing. But disease germs are even more sensitive than your eyes. The chlorine kills germs. That keeps you from catching a cold from other swimmers. It also keeps the swimming pool fresh and clean.



4 True Think about what happens when you brush your teeth. You turn on the faucet to wet your toothbrush. Then you brush and brush. Meanwhile the water runs and runs and runs. That's a gallon of water down the drain. Water is a natural resource. Like all the others, it shouldn't be wasted. So don't be a drip! Turn off the water while you brush. Then turn it back on when it's time to rinse. Okay?

5 True The wood of a tree may look solid. But inside, it is made up of tiny tubes that are too small to see. When connected, some of these tubes can be 30 feet tall. Water is brought into these tubes by the roots of the tree. These tiny bits of water stick to the sides of the tube. They also stick to each other. The edges of the water move up the tube, pulling the rest of the water along. Slowly and steadily, the water flows up the tree trunk and into the branches and leaves. This process is called *capillary action.*

6 False We told you some questions were tricky! It is true that camels can go without drinking water for over a week. But there are other desert animals that also have learned to live where water is scarce. The champ when it comes to not drinking is the pack rat. These little desert animals never drink! Every drop of water they get comes from the food they eat. You get some water from food, too. But don't try to live like a pack rat. Three days without a drink and you'd be all dried up.



7 True You usually feel hot and sticky when you sweat. But actually the sweat is helping to cool your body. As your body heats up on a hot day, some of the sweat evaporates. When it goes into the air, it takes heat from your body with it.

But there are some days when sweating doesn't cool you off as well. That happens when the weather forecaster says that the air is already holding a lot of moisture. There isn't room for much more. So, on days like that, you can't really get cool. You just stay sweaty.

8 True But don't expect to find a stream of root beer bubbling out of the ground. Natural soda water is different from the kind you usually drink. Sometimes you see it in the store. Look for soda water that says "naturally carbonated." Here's how it is made. The soda starts out as ordinary rain. But when it falls to the ground and soaks in, the water gets trapped by rock. Minerals from the underground rocks dissolve in the water. Sometimes the pressure of all the rock on top of the water forces carbon dioxide gas into the water, too. When people drill wells and bring the water to the surface, the carbon dioxide comes out of the water in bubbles, just like regular soda. Natural soda water has a zingy taste. But orange or cherry flavors? No way!

ILLUSTRATION © BARBARA HAMLIN

THE BLOODHOUND GANG

The Case of the Polluted Pond

By Becky Cheston

ILLUSTRATIONS BY BOB PEPPER

"It's Sammy Benoit to the rescue!" yelled Skip.

It was a sweltering August day, the office air conditioner was broken, and Sammy, who had just poked his head in the door, lived near the popular swimming hole, Peppermill Pond.

"Let's get our bathing suits!" exclaimed Vikki, wiping her brow.

"And my fishing pole!" said Ricardo. "Peppermill Pond—here we come!"

"Wait a second, guys," said Sammy. "I was sort of hoping you'd come to *my* rescue. I'd like you to come back to the pond with me, but we won't be able to go swimming."

"Why not?" asked Vikki.

"Somebody's poisoned the water!" said Sammy. "Maybe you can find out how—and who!"

Fishing For Clues

"Someone's going to have to unstick me from this seat!" Skip complained. It was a half-hour ride to Peppermill Pond and the air conditioner on the bus was broken.

Peter Buchanan waved excitedly when he saw Sammy get off the bus with the Bloodhound Gang. He was standing under a new sign which read: "No Swimming, No Fishing." It was easy to see why. The pond was covered with a slimy green substance. A couple of dead fish floated near the shore. And the smell was disgusting.

"Look!" said Peter. He held up a jar. "I collected some of the poison green stuff. Maybe you can have it analyzed."

"Thanks," said Vikki, "but I already know what it is."

"Yeah," said Ricardo. "That's algae."

"Tiny little water plants," Vikki explained. "A lot of microscopic water animals eat algae."

"So it's not poison," said Peter.

"When there's this much it is!" said Vikki. "Too much algae might mean there's no oxygen left in the water. That could be why the fish are dying."

"But where did it all come from?" asked Sammy.

"Well, if the algae get too much food, they can multiply too quickly," Ricardo told him. "For example, they can live on phosphates—those are the chemicals in detergents."

"So we know the pond's polluted, but we still don't know how!" said Peter.

"I've got an idea!" said Skip. "Why don't we split up and search all around the shore? We can see if there are any pipes or drains leading into the water."

"That's a waste of time," replied Sammy. "We've explored every inch of this place! There's nothing like that here."

"What about the stream?" asked Skip.

"The stream?" Peter said.

"Yeah," answered Skip. "It runs into the pond, but I don't know where it comes from."

"And if something was dumped into the stream..." said Ricardo.

"What are we waiting for?!" shouted Sammy.

A Stream of Evidence

As they walked along the stream's edge with their two friends, Vikki, Skip, and Ricardo passed the Buchanan farm.

Suddenly, Ricardo spotted something that looked out of place. A truck, carrying a load of large brown sacks, was traveling along the pond road. It slowed to a halt.

"Quick!" he whispered. "Get behind the bushes!"

The five young people huddled in the bushes. "What are we doing here?" asked Peter.

"That stuff in the truck looks suspicious," answered Ricardo.

"That 'stuff' happens to be fertilizer," said Peter, "and it's being delivered to the farm."

"Oh," said Ricardo. "Never mind."

Moments later, they were following the stream again.

"How far does this go?" asked Skip.

"To the town dump, apparently," said Vikki. "Look!" She was pointing to a mound of thrown away junk: rickety chairs, an old refrigerator, and some crates.

"That's not really the town dump," said Sammy. "People have been dumping stuff here lately—but it's illegal."

"It's garbage, but I don't see any pollutants," replied Vikki.

"Wait a minute!" said Ricardo. "I see something coming. Quick! Get behind the tree!"

"Forget it, Ricardo," said Sammy. "What is it this time? A truckload of killer Twinkies?"

"Look!" said Ricardo.

A truck was pulling up to the dump. It stopped, and two men in white gloves and coveralls stepped out. The sleuths ducked behind a large tree.

The two men opened the back of the truck and hoisted out a large plastic vat. They walked a few steps, then heaved it onto the junk pile.

"Will you look at that!" whispered Ricardo. The barrel was now lying on its side. A mysterious grey liquid was dripping out of it.

"Chemicals!" whispered Skip.

They watched as the men unloaded five more vats onto the junk pile. "Phew! What a smell!" Peter exclaimed.

"We've got to do something!" said Sammy.

"Hold it!" said Vikki. "I don't think it's wise to go near that stuff."

"Well, there's a name on the side of the truck," said Ricardo. "Peabody Packaging."

"Yes," said Vikki. "Let's find out what they're packing."

The Trail Dries Up

A half hour later they stood in front of the Peabody Packaging plant.

"This place just opened," Sammy whispered. "I don't know what they do here."

"The loading dock's open in the back," said Skip. "Why don't we sneak in and find out?"

The friends tiptoed through the loading door and crouched behind a stack of boxes.

"There's that smell again," said Vikki.

"Look!" said Ricardo. Off to the right, workers were unloading white vats. In the middle of the factory floor, a conveyor belt carried small metal cans. At the end, workers packed the cans into boxes.

"If only we could get a look inside those boxes!" said Sammy.

"We're standing behind a whole stack of them," said Ricardo. "Let's open one up!" →

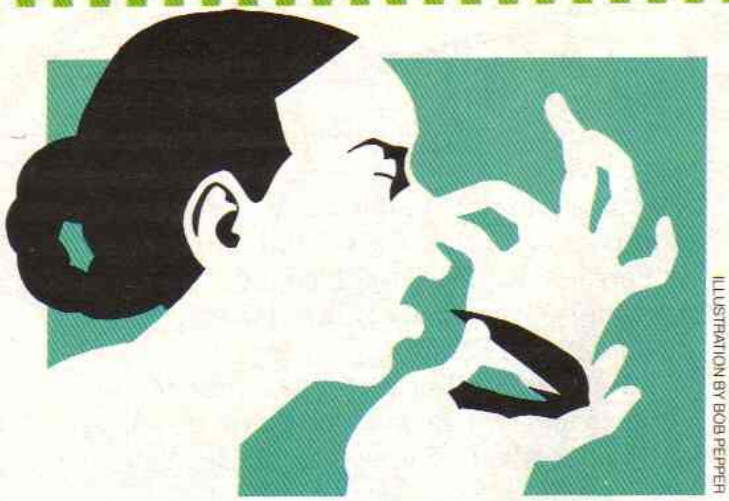


ILLUSTRATION BY BOB PEPPER

He quickly ripped off a box top.

"Oh boy," groaned Vikki, lifting out a can. "I thought that smell was sort of familiar!"

Sammy read the label out loud: "Clancy's Clams."

"Then they didn't...," Ricardo began.

"Then this probably isn't what polluted the pond," said Vikki. "If this plant just opened, they haven't had time to dump enough clam juice to hurt the pond."

"But they were dumping illegally, and I'm going to report it to the sheriff," said Peter.

"But what about the pond?" asked Sammy.

A Soggy Solution

No one talked during the long, hot trek back to the pond. On top of everything else, it was starting to rain.

"There's a shack by the farm!" yelled Peter. "Let's make a run for it!"

Dripping wet, everyone crowded into the shack. "Look," said Sammy, peering through the window. "Your dad's still out there. What's he doing—spreading fertilizer or something?"

"Wait a minute...," said Ricardo.

"That's it!" said Vikki. "We were so busy thinking about dumping that we forgot to look right under our noses!"

"What are you talking about?" asked Sammy.

"Agricultural pollution!" said Ricardo.

"You mean the farm?" asked Peter. "But that's crazy. We don't use any poisons!"

"But you use fertilizer," said Vikki.

"But how could fertilizer pollute Peppermill Pond?" asked Sammy.

"Well," said Ricardo, "in a pond or lake, there are bacteria that live on natural wastes, like dead fish. The bacteria break the wastes into chemicals called nutrients."

"The nutrients are eaten by algae, which are eaten by tiny fish which are eaten by larger fish, and so on," continued Vikki. "Then, when the fish die, they become waste and the cycle repeats itself."

"So?" asked Peter.

"So, if there's too much waste," said Ricardo, "the cycle breaks down."

"Fertilizer may not seem like pollution," said Vikki. "But it contains lots of nutrients, which make the algae population explode. The algae die and become food for bacteria. And the increased numbers of bacteria use up all the oxygen in the pond."

"And that's why all the fish die?" asked Peter. Vikki nodded.

"Wow!" said Sammy. "But how would the fertilizer get in the pond?"

"The rain," said Ricardo. "It washes it off the fields and into the stream."

"Oh boy," said Peter. "You'd better come with me to the farm and explain this to my dad. Then maybe we can get someone to help us figure out what to do."

"You guys have been a big help," said Sammy as they walked over to the Buchanans. "I wish I had something to give you in return, but I don't even have 10 dollars."

"That's okay," said Skip, reaching into his bulging pockets. "I collected a few souvenirs along the way."

"Oh, really?" said Vikki, raising an eyebrow. "What?"

"Ten clams."

Watch for next month's Bloodhound Gang mystery!

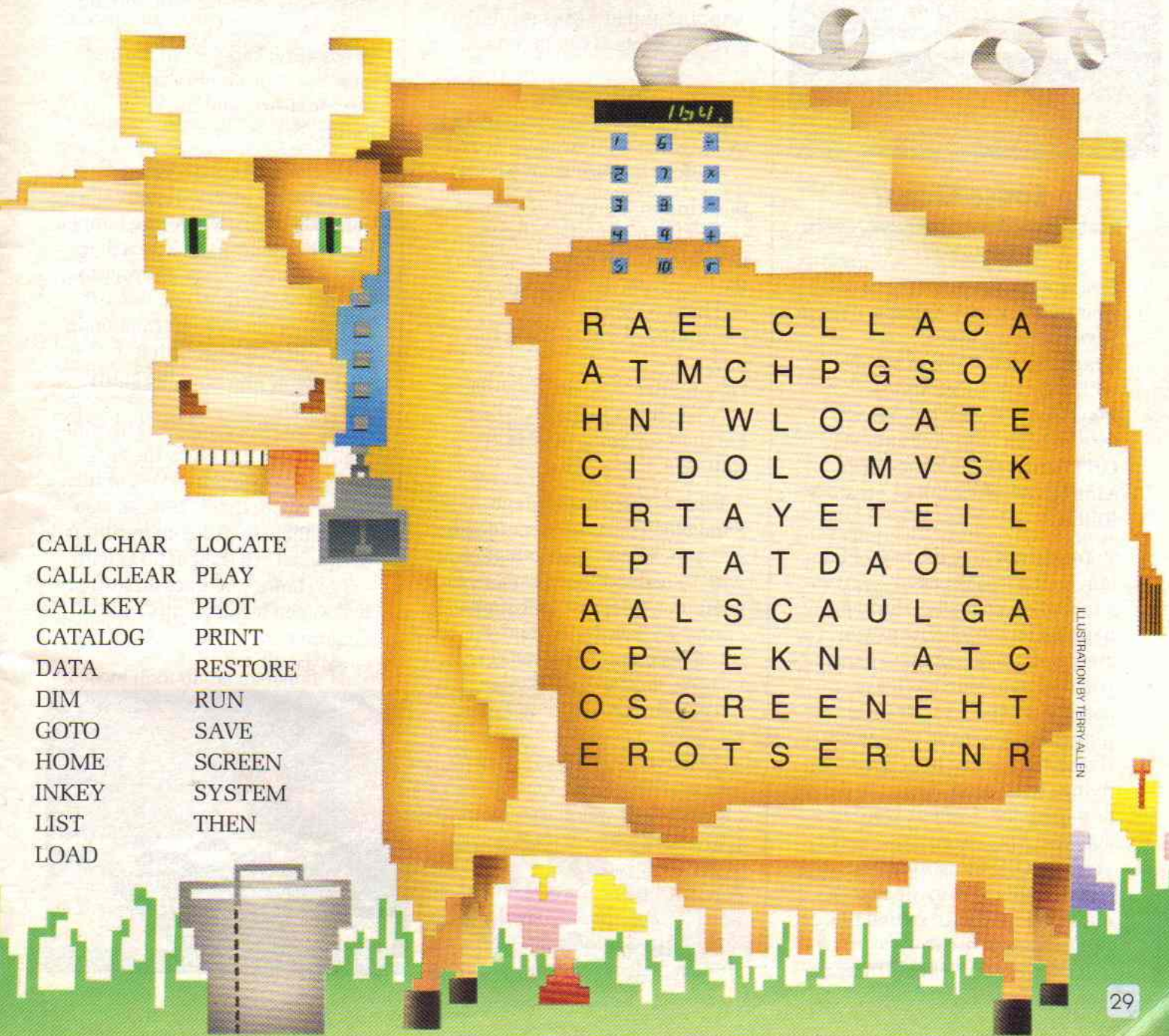
ILLUSTRATION BY DAVE FE BLAND

Word Search

What do you call a beef counting machine? You'll find the answer in this BASIC word search, sent in by *Daniel Feyer*, 9, of San Francisco, California. Find all the BASIC programming terms listed. The leftover letters spell out the answer to the riddle.

Remember, words can be written backwards, forwards, up, down and diagonally.

Answer on the Did It! page.



R A E L C L L A C A
A T M C H P G S O Y
H N I W L O C A T E
C I D O L O M V S K
L R T A Y E T E I L
L P T A T D A O L L
A A L S C A U L G A
C P Y E K N I A T C
O S C R E E N E H T
E R O T S E R U N R

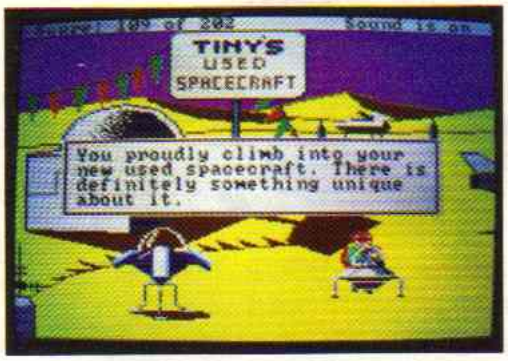
CALL CHAR
CALL CLEAR
CALL KEY
CATALOG
DATA
DIM
GOTO
HOME
INKEY
LIST
LOAD
LOCATE
PLAY
PLOT
PRINT
RESTORE
RUN
SAVE
SCREEN
SYSTEM
THEN

ILLUSTRATION BY TERRY ALLEN

reviews

by Phil Wiswell

All software is rated on a scale of one to 10, based on Phil's overall reaction. A rating of 10 is the very best.



Space Quest

(Sierra, IBM PC, $40)

Description: An outer space adventure story with a simple object: Save your own life!
Graphics: Hundreds of scenes with 3-D-type illustrations.
Playability: A very long adventure, but can hold your interest.
Originality: Much like Sierra's *King Quest* series, but a new story.
Rating: 7 ★★★★★★★

You do not play the part of Captain on this space vessel—you are a sanitation engineer who enjoys napping on the job. But as you awaken from one of these naps, you find your ship has been boarded by space pirates. The pirates have come to steal the Star Generator, the last hope for your dying civilization. Trying to defeat or punish the invaders would be suicidal. Your mission is to save your own life by escaping the ship, and possibly to ruin the Star Generator before you go so that the pirates cannot use it.

It's not exactly a noble mission, but it feels real and that's what counts in an adventure. Exploring is a combination of moving around with a joystick and typing brief sentences such as "Look under the computer monitor." Clues are hidden in the text as well as the graphics, so examine everything carefully. *Space Quest* takes lots of mapping and lots of hours, but it gives back lots of fun in return.

Scrabble

(Leisure Games, distributed by Electronic Arts, Commodore 64, $35)

Description: Computerized version of the famous board game.
Graphics: Color graphics display the board, players' tiles and special help screens.
Playability: As playable as the original.
Originality: No major differences between this and the board game, but there are some nifty features.
Rating: 8 ★★★★★★★★

What is there to say about *Scrabble*? This is the same game everyone knows. You can play with a combination of human and computer "players" or just play against the computer. And you can set each computer player's skill level so you get a fair challenge.

The computer runs the game, randomly dealing out the tiles to each player, making sure that all moves are legal, etc. One option allows you to watch the computer players "think" out their moves. This game works best when it's just you against the computer. It is ideal for learning to play the game and for the *Scrabble* fan who can't find enough opponents.

Killed Until Dead

(Accolade, Commodore 64, $40; also for Apple II)

Description: A murder mystery, and you are the detective.
Graphics: Beautiful color graphics; many different games.
Playability: Several different mysteries are included.
Originality: Lets you snoop and investigate in a highly original, easy-to-learn and fun way.
Rating: 9 ★★★★★★★★★

It seems that once a year, a club of mystery writers gathers at the Gargoyle Hotel (where you happen to work as detective). The writers play a strange game—they try to murder one of their members. If you gather enough information in time, you will be able to stop their awful game and send the guilty one to jail.

The way the game works is simple. You can interview the suspects or go through a stack of files to read about them. You can also watch them in different locations or even record their actions with "video tapes." The action really makes you feel in control of the situation, even when you're not. Great game!

Hollywood Hijinx

(Infocom, IBM PC, $40; also for most home computers)

Description: An all-text adventure that takes place on the estate of a Hollywood movie star.
Graphics: None
Playability: Difficult to make progress the first few times, but you *will* want to try again.
Originality: Standard *Infocom*, which means an original, well-written, fun adventure.
Rating: 8 ★★★★★★★★

Your Uncle Buddy Burbank and his wife Hildegarde have passed away, but not without giving you one last game to play at their Hollywood mansion. Uncle Buddy has booby-trapped the place and hidden 10 treasures from his films all over the grounds. His instructions are simple: Find all 10 within 12 hours and the estate belongs to you. But if you fail, the other nieces and nephews will be given the same chances.

You begin in the driveway by the front door of the mansion. There are many rooms, gardens and a maze of hedges the size of a football field, among other things. At first, most of the puzzles you run into seem impossible. Don't get frustrated; just keep exploring. Look at, behind, around and under everything, and soon the solutions will come to you. Stick with it, and this is a fun game—especially if you're a movie fan.

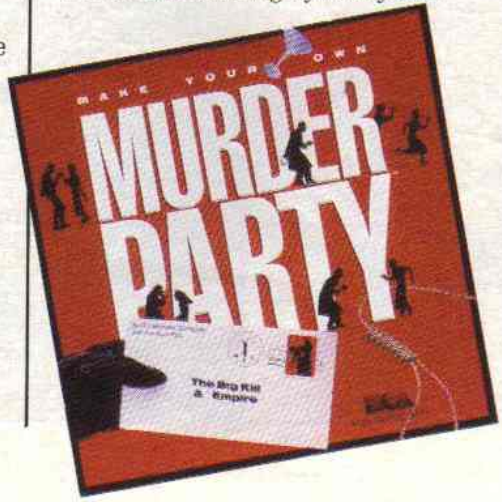
Make Your Own Murder Party

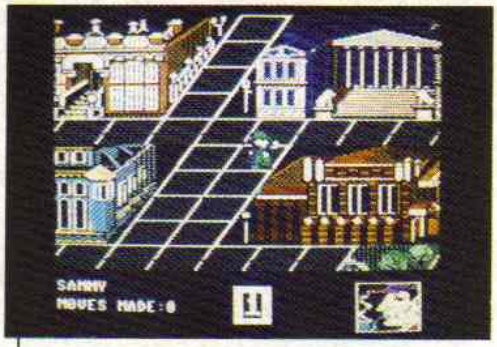
(Electronic Arts, Apple II, $40; also for IBM and Commodore 64)

Description: Helps you create a mystery party in which your guests try to solve a murder.
Graphics: None—you don't play this game on your computer.
Playability: Forever! Or until you no longer want to throw the best parties on your block. But you need a printer to use this program.
Originality: A very original use of the computer for entertainment.
Rating: 9 ★★★★★★★★★

This is a computer disk, but you don't need a computer to play this game. Instead, the program helps you make all the plans for a "mystery" party, in which your guests will act the parts of suspects in a murder. The program allows you to create invitations and clues, and plots and prints out all the materials you need for the party.

As host, you will give roles to six or eight of your friends, including real tidbits of information about each of them. Then you mail invitations and documents to your friends. Guests arrive at the party acting their parts and try to figure out who the criminal is. It's a cross between a party game and a stage play with plenty of room for acting and crime-solving by everyone.





221B Baker Street

(Datasoft, Apple II, $40; also for Atari, IBM, Commodore 64)

Description: You solve mysteries in a computer board game.
Graphics: Great animation! Gives the feeling of being in London with the great detective, Sherlock Holmes.
Playability: Enough cases to keep you playing for months. Extra case disks are available.
Originality: The idea is old, the play is new and refreshing.
Rating: 8 ★★★★★★★★

To begin the game, up to four players take the parts of Sherlock Holmes, Dr. Watson and other characters. Each character fights tooth and nail to solve the case first and win the game. In turn, players press a button that rolls a computerized die, then move their characters that number of spaces on the board. The board map pictures 15 buildings in London such as Scotland Yard and the Museum. Within each location lies a clue to the mystery.

Players use a checklist to record where they have been and which clues they have uncovered. Solving each case requires some luck, but mostly you have to put the clues together. Playing this game alone is not much fun, but with a group, it's great.

Phil Wiswell, father of three, is a computer consultant and writer.

GO WITH THE FLOW!

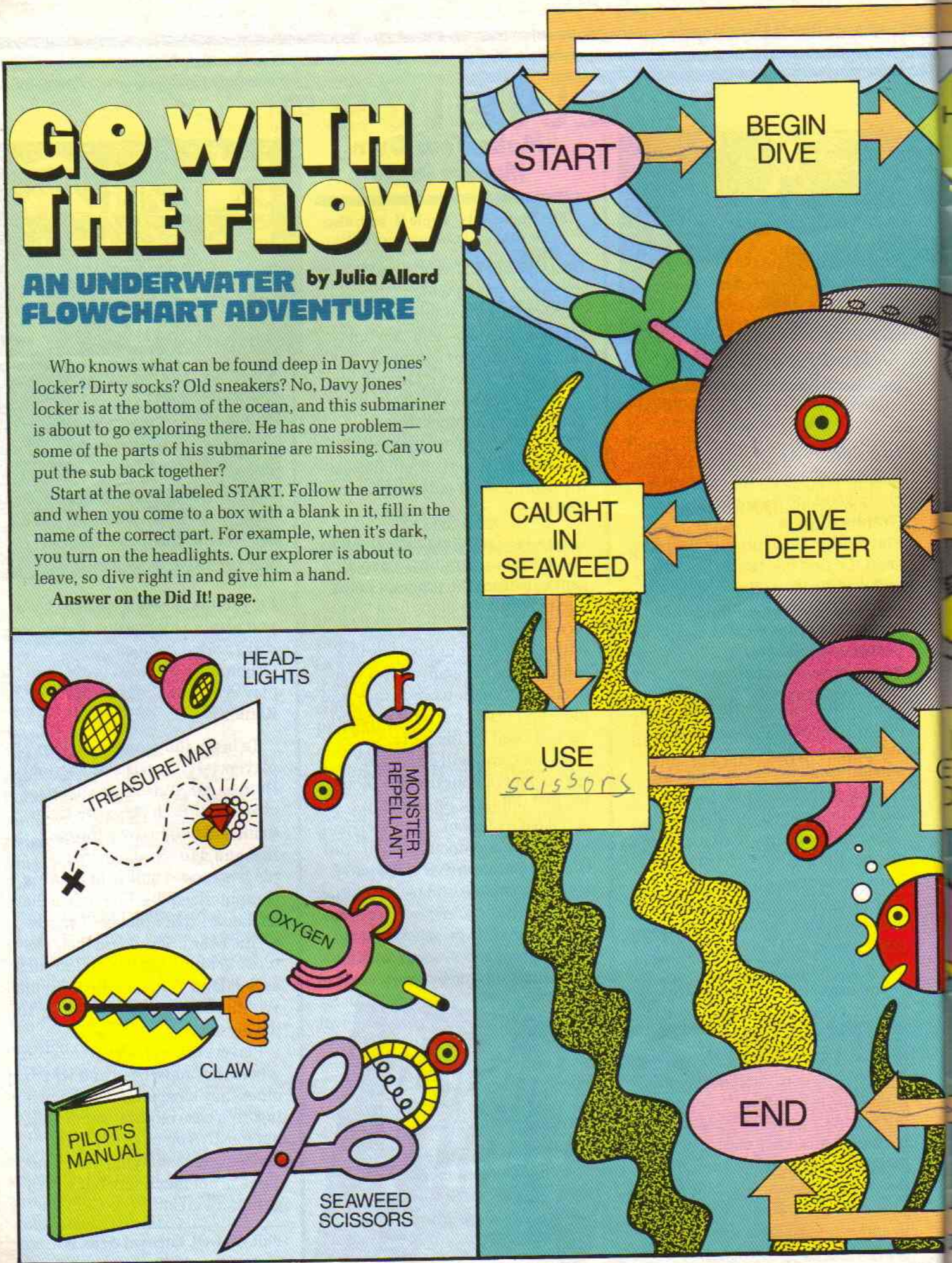
AN UNDERWATER FLOWCHART ADVENTURE

by Julia Allard

Who knows what can be found deep in Davy Jones' locker? Dirty socks? Old sneakers? No, Davy Jones' locker is at the bottom of the ocean, and this submariner is about to go exploring there. He has one problem—some of the parts of his submarine are missing. Can you put the sub back together?

Start at the oval labeled START. Follow the arrows and when you come to a box with a blank in it, fill in the name of the correct part. For example, when it's dark, you turn on the headlights. Our explorer is about to leave, so dive right in and give him a hand.

Answer on the Did It! page.



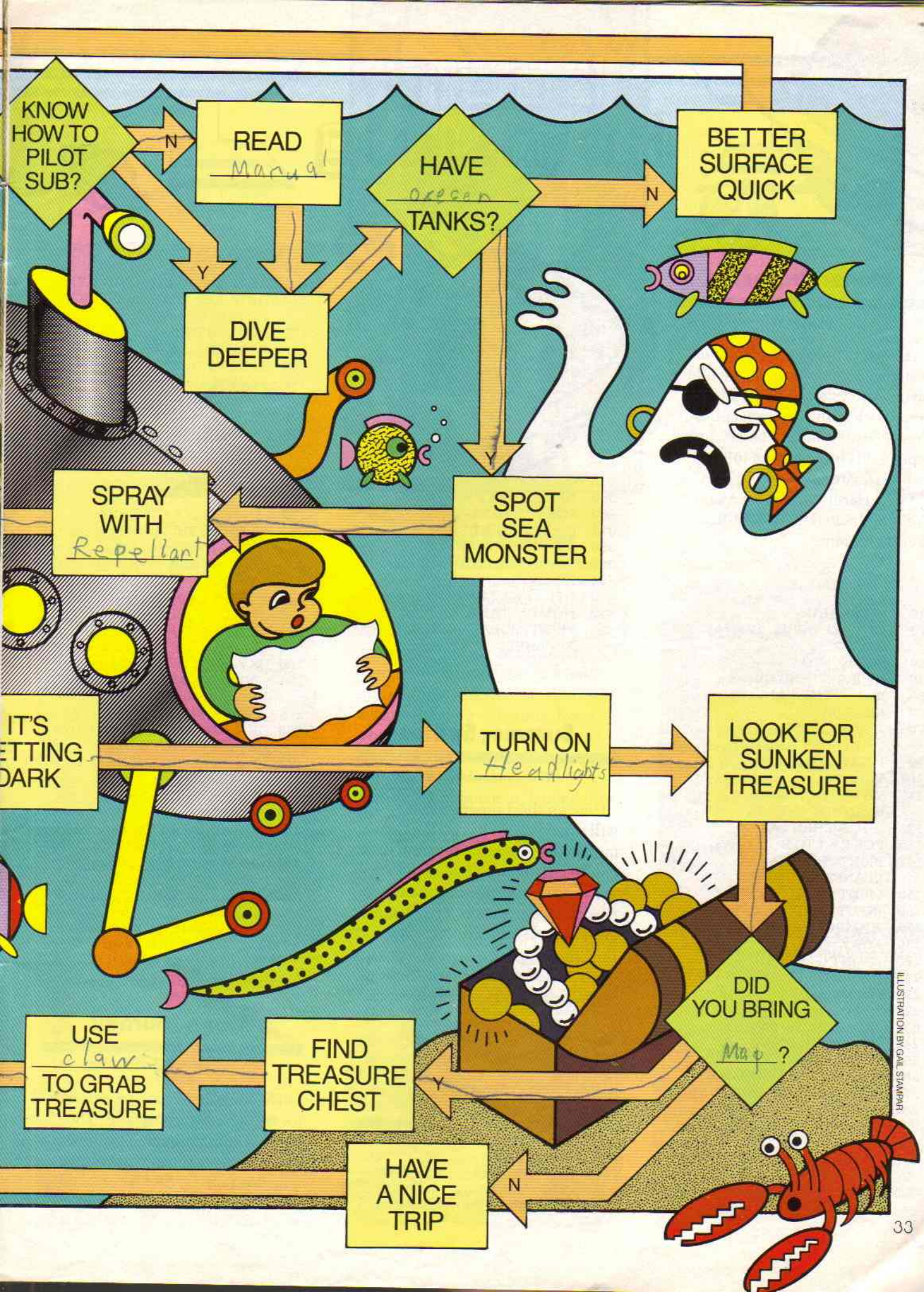
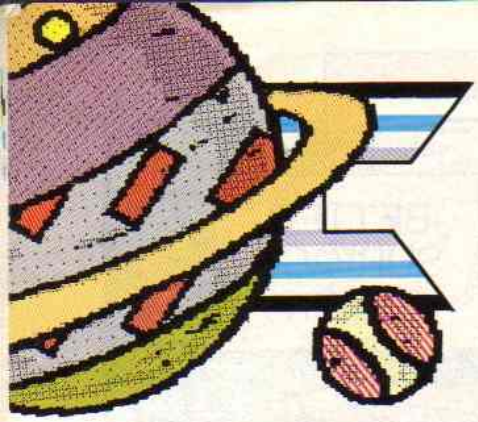
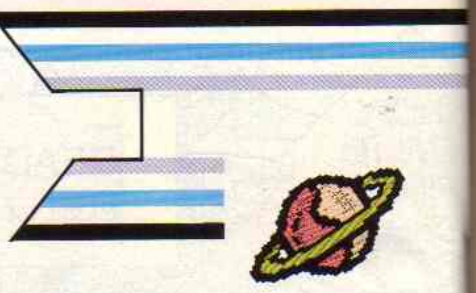


ILLUSTRATION BY GAIL STAMPAR



basic training



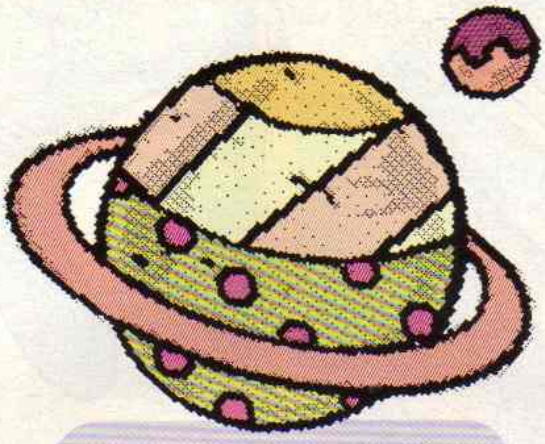
Planet Processor

Apple II

A lot of people have computer systems. But how many have their own *solar* systems? Be the first on your block with your own collection of custom-made planets. Just type in this program and follow the built-in instructions.

Jared Harel, 14, of New Albany, Indiana, created this out-of-this-world program.

```
10  HOME:HGR
20  VTAB 23: INPUT "HOW MANY
    STARS?";S
30  FOR I=1 TO S
40  C=INT (7*RND (1))
50  IF C=4 THEN 40
60  HCOLOR=C
70  X=INT (279*RND (1))
80  Y=INT (159*RND (1))
90  HPLOT X,Y:NEXT I
100 VTAB 23
110 INPUT "HOW MANY
    PLANETS? (1-7)";P
120 IF P>7 THEN 100
130 FOR K=1 TO P
140 PRINT "RADIUS FOR
    PLANET"; K
150 PRINT "INPUT 1-25"
160 INPUT RA(K): NEXT K
170 HOME
180 FOR K=1 TO P
190 C=INT (7*RND (1))
200 IF C=0 OR C=4 THEN 190
210 HCOLOR=C
220 REM
230 XC=INT (279*RND (1))
240 YC=INT (159*RND (1))
250 FOR R=RA(K) TO 1 STEP-1
260 IF R+XC>279 THEN 230
270 IF R+YC>159 THEN 230
280 IF XC-R<0 THEN 230
290 IF YC-R<0 THEN 230
300 HPLOT XC+R,YC
310 FOR I=0 TO 6.6 STEP .3
320 X=R*COS(I)+XC
330 Y=-R*SIN(I)+YC
340 HPLOT TO X,Y
```



```
350 NEXT I: NEXT R: NEXT K
360 FOR I=1 TO 20
370 C=INT (RND(1)*7)
380 X4=INT (RND(1)*279)
390 Y4=INT (RND(1)*159)
400 HCOLOR=C
410 HPLOT X4,Y4:NEXT I
420 HOME: VTAB 22
430 PRINT "SOLAR SYSTEM
    FINISHED"
```

Summer Sprites

Commodore 64/128

Here's a short program that will show you sprites on the Commodore 64. When the program runs, colored diamonds appear one at a time in the upper left-hand corner of your screen. They bounce around until eight are showing, then they begin to "turn off" one at a time. The program will continue as long as you're in a sprightly mood.

```
10  REM SPRITES
20  PRINT CHR$(147)
30  POKE 53280,0
40  POKE 53281,0
50  XY=53248
60  EN=53269
70  COL=53287
80  POI=2040
90  DAT=3840
100 DIM VX(8),VY(8)
110 FOR I=0 TO 7
120 READ VX(I):READ VY(I):NEXT
130 DATA 2,3,1,1,2,1,3,4,3,2,4,5,8,10,
    2,2
140 FOR I=0 TO 15
150 POKE XY+I,0:NEXT
160 FOR I=0 TO 63
170 READ X
180 POKE DAT+I,X:NEXT
190 FOR I=0 TO 7
200 POKE COL+I,I+1
210 POKE POI+I,60:NEXT
220 POKE EN,255
230 NUM=0:INC=1
240 FOR I=0 TO NUM
250 X=PEEK (XY+2*I)+VX(I)
260 IF X>255 THEN VX(I)=
    -VX(I):X=255
270 IF X<50THEN VX(I)=
    -VX(I):X=50
280 POKE XY+2*I,X
290 NEXT
300 FOR I=0 TO NUM
310 X=PEEK (XY+2*I+1)+VY(I)
320 IF X>200 THEN VY(I)=
    -VY(I):X=200:NUM=NUM+
    INC:IF NUM=8 THEN INC=-
    1:NUM=7
330 IF X=200 AND NUM=0 THEN
    INC=1
340 IF X<50 THEN VY(I)=
    -VY(I):X=50
350 POKE XY+2*I+1,X
360 NEXT:GOTO 240
1010 DATA 1,128,0,3,192,0,7,224,0
1020 DATA 15,240,0,31,248,0,63,252,0
1030 DATA 127,254,0,255,255,0,
     255,255,0
1040 DATA 127,254,0,63,252,0,
     31,248,0
1050 DATA 15,240,0,7,224,0,3,192,0
1060 DATA 1,128,0,0,0,0,0,0,0,0,0
1070 DATA 0,0,0,0,0,0,0,0,0
```

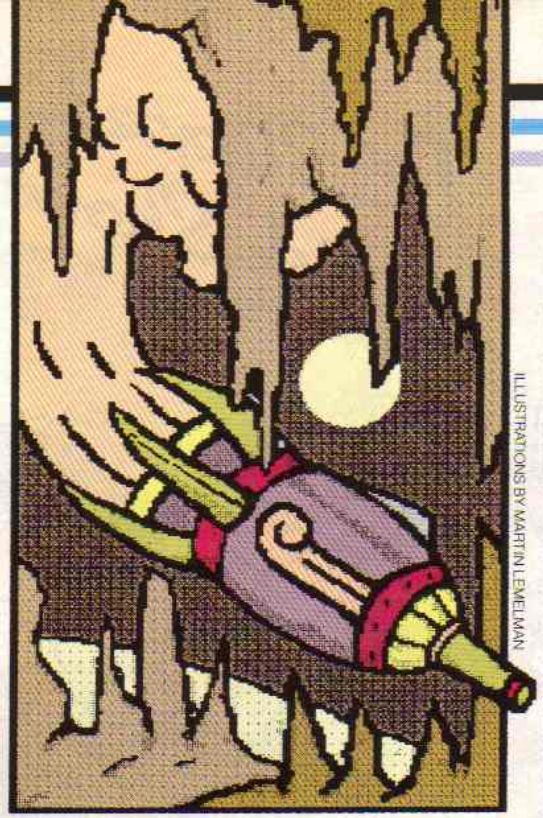
Moon Journey

Atari 800/400 XL

This month we have two "looney" (or is that lunar?) programs. The first is a short animated cartoon of a space voyage. You will see a spaceship blast off, fly over a very strange lunar landscape and then land.

A program like this only comes around once in a blue moon. Our thanks to **Daniel Top**, 9, of Miami, Florida, for rocketing it to us.

```
10  POKE 752,1
20  A=80:B=75:C=83
30  GRAPHICS 7+16
40  COLOR 3:PLOT 80,80
50  DRAWTO 90,80
60  DRAWTO 90,60
70  COLOR 2
80  PLOT 84,A:DRAWTO 86,B
90  DRAWTO 88,A:DRAWTO 84,A
100 COLOR 1
110 DRAWTO 84,C:DRAW TO 88,C
120 DRAWTO 88,A
130 SOUND 0,80,8,9
140 IF B=0 THEN 160
150 A=A-1:B=B-1:C=C-1:GOTO
    30
160 GRAPHICS 7+16
170 COLOR 3:PLOT 80,80
180 DRAWTO 90,80:DRAWTO 90,60
190 SOUND 0,0,0,0
200 FOR R=1 TO 500:NEXT R
210 GRAPHICS 7+16
220 FOR X=80 TO 60 STEP-1
230 COLOR 2
240 PLOT 60,2
250 DRAWTO 100,2:DRAWTO
    121,22
260 DRAWTO 121,52:DRAWTO 100,
    73
270 DRAWTO 60,73:DRAWTO 39,52
280 DRAWTO 39,22:DRAWTO 60,2
290 PLOT 50,33:DRAWTO 60,34
300 DRAWTO 55,40:DRAWTO 50,33
310 PLOT 65,7:DRAWTO 100,60
320 COLOR 1
330 PLOT 80,X
340 SOUND 0,80,8,4
350 NEXT X
360 FOR U=1 TO 500:NEXT U
370 A=1:C=10
380 GRAPHICS 7+16
390 COLOR 2
400 PLOT 0,60:DRAWTO 50,50
410 DRAWTO 80,50:DRAWTO 150,
    60
420 COLOR 1:PLOT 80,A
430 DRAWTO 75,C:DRAWTO 85,C
440 DRAWTO 80,A
450 IF C=50 THEN 480
460 SOUND 0,80,8,9
470 A=A+1:C=C+1:GOTO 380
480 PLOT 80,41:DRAWTO 80,34
490 COLOR 3
500 DRAWTO 85,34:DRAWTO 85,38
510 DRAWTO 81,38
520 SOUND 0,0,0,0
530 FOR I=1 TO 1500:NEXT I
```



ILLUSTRATIONS BY MARTIN LEMELMAN

Lunar Explorer

IBM PCjr. (128K) and IBM PC with color graphics

Here's another "moonlighting" program. This one is a real action game. You must move your spaceship through the cavern without hitting the floor or ceiling. Keep your ship from falling by tapping any key.

Brandon Tibbets, 16, of West Hartford, Connecticut, landed this program for us.

```
10  RANDOMIZE TIMER
20  CLS:CLEAR,,,32768!
30  SOUND ON
40  SCREEN 5:KEY OFF
50  RM=1:XB=40
60  DRAW"BM0,6C12R16L1H1L
    12D2C4R12L1G1L8BL1BU4C
    11R10H1L8U1R8H1L6R1E1R2
    D1C15R1D1R1D1BD1BL3C3L
    3U1F1U1E1"
70  DIM S(85)
80  GET(0,0)-(16,8),S
90  CLS
100 LINE(0,0)-(60,20),6
110 FOR A=1 TO 8
120 READ X,Y:LINE-(X,Y),6
130 NEXT A
140 PAINT(160,10),6,6
150 PAINT(160,190),6,6
160 FOR X=60 TO 240 STEP 20
170 Z=INT(RND*43+1)+XB
180 LINE(X,20)-(X+10,Z),6
190 LINE-(X+20,20),6
200 PAINT(X+10,22),6,6
210 Z=INT(RND*50+1)+100
220 LINE(X+10,180)-(X+20,Z),6
230 LINE-(X+30,180),6
240 PAINT(X+20,178),6,6
250 NEXT
260 LOCATE 1,10
270 PRINT "LEVEL";RM
280 X=1:Y=30:YAD=0
290 PUT(X,Y),S
300 K$=INKEY$
310 IF K$="" THEN
    YAD=YAD+.4:GOTO 350
320 YAD=YAD-1
330 NOISE 4,8,.5
340 NOISE 4,4,.5
350 PUT(X,Y),S:X=X+1
360 Y=Y+YAD
370 IF POINT(X+17,Y+6)=6 OR
    POINT(X+9,Y-1)=6 OR
    POINT(X+8,Y+9)=6 THEN
    430
380 PUT(X,Y),S
390 IF X<>303 THEN GOTO 300
400 PLAY"T355L64MLO0
    V15EFEF"
410 RM=RM+1:XB=XB+2
420 CLS:RESTORE:GOTO 100
430 NOISE 6,13,1
440 NOISE 6,15,2
450 NOISE 6,12,1
460 LOCATE 10,15
470 PRINT "GAME OVER"
480 PRINT "PLAY AGAIN? Y/N"
490 INPUT A$
500 IF A$="N" THEN 530
510 RM=1:CLS:RESTORE:XB=40:
    GOTO 100
520 DATA 260,20,290,90,320,90,320,
    110,290,110,270,180,70,180,0,199
530 END
```

Send Us Your Programs

If you've written a program you'd like us to print, send it in. Include a note telling us your name, address, age, T-shirt size and type of computer. If we like it, we'll print it and send you $25.

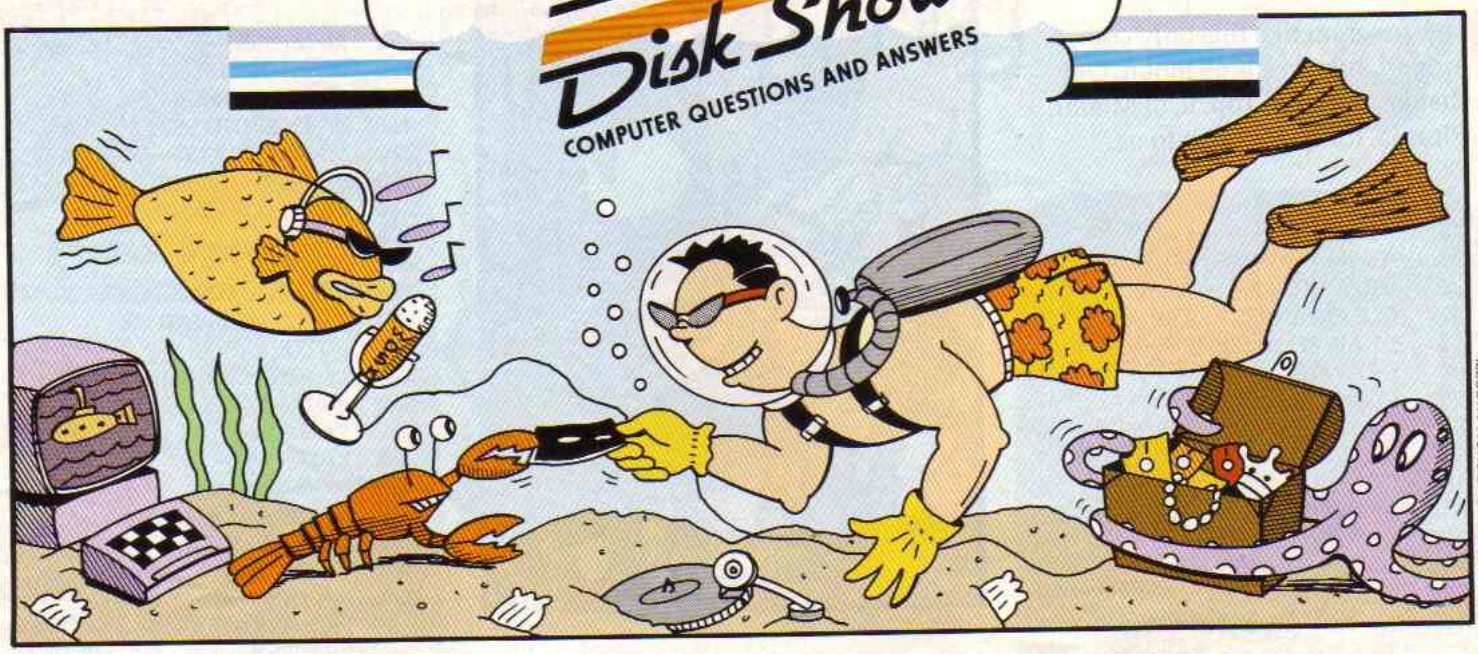
All programs must be your own original work. We cannot return programs. Please do not send disks.

Send your program to:

Basic Training
3-2-1 CONTACT Magazine
1 Lincoln Plaza
New York, NY 10023

The Slipped Disk Show

COMPUTER QUESTIONS AND ANSWERS



ILLUSTRATIONS BY CAMERON EAGLE

Greetings, computer guppies! This is your pal, Slipped Disk, with a special underwater edition of the Slipped Disk Show! A lot of people think that computers are all wet, but they're wrong! *I'm* all wet, but my computer is nice and dry back at the studio.

Anyway, I'm just bubbling over with computer information, so let's submerge ourselves in the first question. Here it is, right where I left it, under this starfish. It's from **Raymond Nichelson,** of Wyoming, Michigan, who asks:

"Why are computer programs so long?"

Raymond, I don't want to sound like a wet blanket, but computer programs don't have to be long. If all you want is to display bright colors on your Atari or Apple, you don't need a very long program.

However, if you want to do something even a little more complicated, you'll have to start writing longer programs. Why? Because computer instructions, or commands, have to be very simple. Every step has to be written out.

In other words, if I want my dog, Floppy, to fetch my slippers, all I have to do is say, "Floppy, fetch my slippers." But if I wanted to write a computer program to fetch my slippers, every step would have to be spelled out. I'd have to tell the computer where to look, how to pick the slippers up, how to get back to me, etc. Soon, I'd have a long program.

Of course, the big difference between a computer and Floppy is that a computer will do what it is programmed to do, but Floppy will never do anything. (Floppy is scuba diving, but that was his idea.)

Well, let's sail right along to the next question. It's from **Jason Daniet,** of Richmond, Virginia. Jason wants to know:

"How much information can a floppy disk hold?"

This may sound fishy, Jason, but it depends on the type of disk and the type of computer. For example, the IBM PC uses a 5¼-inch disk that holds from 360K to 1,200K of information. The Macintosh uses a 3½-inch disk that can hold 800K.

What is a K? K stands for *kilobyte*. *Kilo* usually means 1,000. For example a *kilo*meter is 1,000 meters. But a kilobyte is actually 1,024 bytes. Now, what is a byte? A byte is the amount of computer memory needed to store one letter or symbol. So on a 800K disk, you can store over 800,000 letters, or a medium-sized book.

And speaking of bites, I just saw a shark on the other side of that seaweed. I think it's time for me and Floppy to head back to shore. I wonder what happened to Floppy? Oh well, we both should be dry by next issue. So if you have any computer questions, send them to:

The Slipped Disk Show
3-2-1 CONTACT Magazine
1 Lincoln Plaza
New York, NY 10023

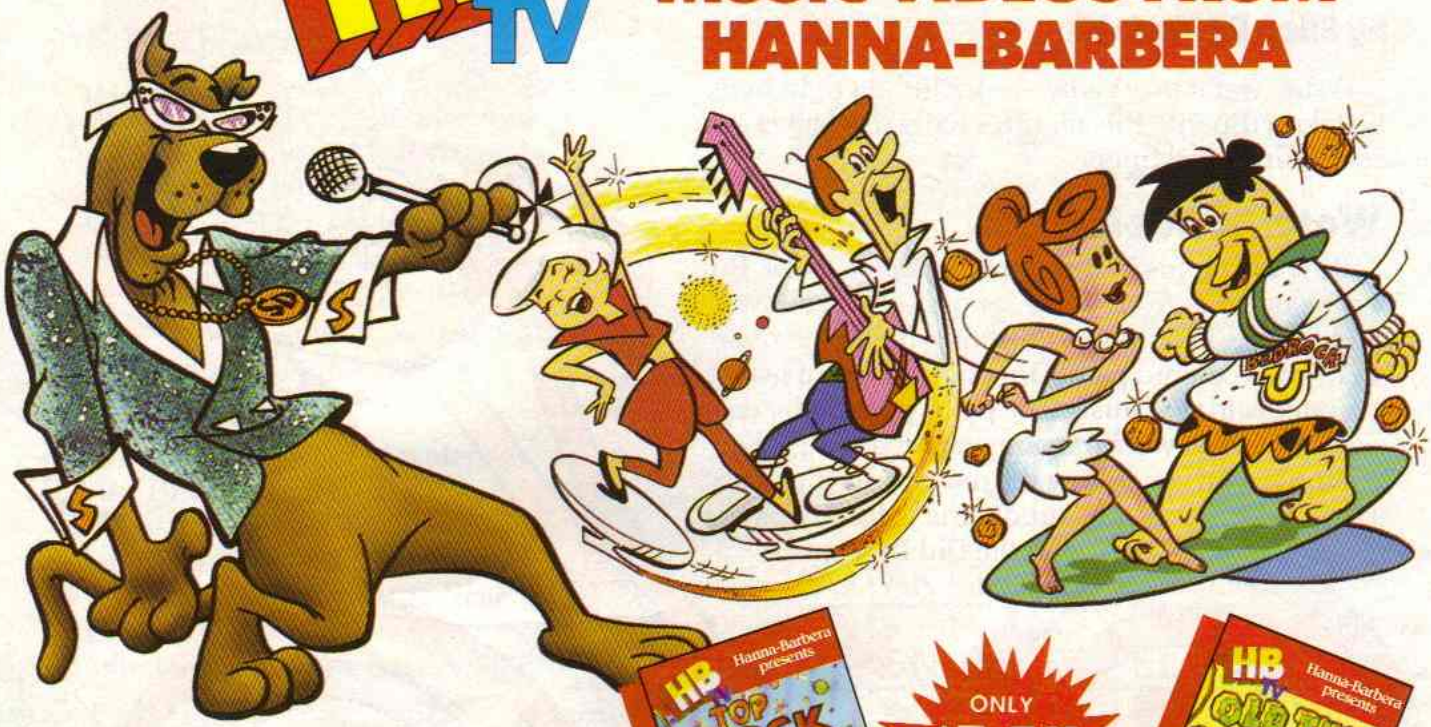
Floppy? Oh, Floppy!

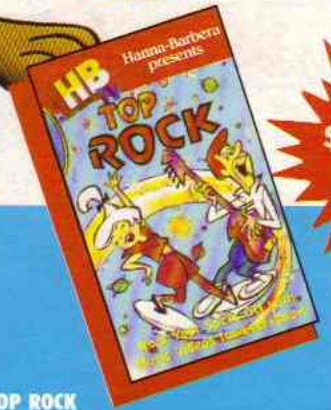
Slipped Disk saw *Jaws III* four times.

NEW!

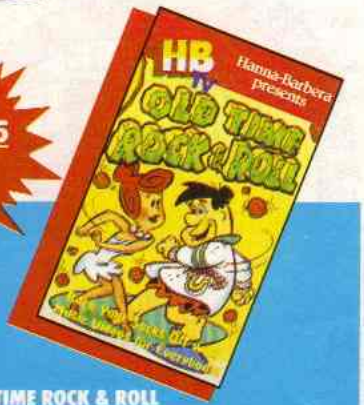
HANNA-BARBERA'S HB TV

"TOP ROCK" AND "OLD TIME ROCK & ROLL" MUSIC VIDEOS FROM HANNA-BARBERA





ONLY $14.95 EACH



The Real Thing

Now your whole family can share the rock classics you loved then and the contemporary hits you enjoy now. "Old Time Rock & Roll" and "Top Rock" are quality entertainment...again and again. They're fun for all ages. And best of all, they were created with the same skillful animation featured in everyone's favorite Hanna-Barbera cartoons.

Rock Your Socks Off!

"Old Time Rock & Roll" headlines Bedrock's Flintstones with other H-B stars, dancing to ten R & R classics including Bob Seger's "Old Time Rock & Roll," "Please Mr. Postman" by The Marvelettes, and "Teddy Bear" by Elvis Presley.

"Top Rock" spotlights the Jetsons and other H-B celebrities performing "Ghostbusters" by Ray Parker, Jr., Lionel Richie's "All Night Long," "Stayin' Alive" by the Bee Gees and seven other Top 40 hits.

An Entertainment Value

Each thirty-minute video is recorded in HI-FI STEREO for outstanding sound quality, and is available on VHS or Beta. They're a sensational entertainment value in beautiful, full-color animation at only $14.95 each.

TOP ROCK

Lionel Richie "All Night Long" · Ray Parker, Jr. "Ghostbusters" · Bee Gees "Stayin' Alive" · The Police "Every Breath You Take" · Roman Holliday "Don't Try to Stop It" · Rockwell "Somebody's Watching Me" · Hall & Oates "You Make My Dreams" · Huey Lewis & the News "You Crack Me Up" · Stevie Wonder "Whereabouts" · Aretha Franklin "Freeway of Love"

OLD TIME ROCK & ROLL

Bob Seger & the Silver Bullet Band "Old Time Rock & Roll" · Elvis Presley "Teddy Bear" · The Beach Boys "Catch A Wave" · Bobby Pickett "Monster Mash" · Dave Edmunds "Da Doo Ron Ron" · The Marvelettes "Please Mr. Postman" · Bill Haley & the Comets "See You Later Alligator" · The Ad Libs "The Boy from New York City" · Rare Earth "I Just Want to Celebrate" · Bobby Day "Rockin' Robin"

Order now by calling this toll free number, or by sending your check along with the order form.

1-800-453-4909

Fill in this coupon and mail it with a check or money order to:
HANNA-BARBERA OFFER c/o Jill Rosenberg
Children's Television Workshop*
1 Lincoln Plaza, New York, NY 10023

WORLDVISION HOME VIDEO INC.
A TAFT COMPANY
Not affiliated with World Vision International A Religious and Charitable Organization

Your Name _____

Address _____

City _____ State _____ Zip _____

VHS or Beta Qty:

_____ Top Rock _____ x $14.95 = $_____

_____ Old Time Rock _____ x $14.95 = $_____

Total no. of videocassettes ordered _____

Plus 8.25% NYS Sales Tax (for New York State residents only) _____

Plus Postage and Handling (add $1.95 per cassette) _____

Total check or money order enclosed $_____

Please allow 2-4 weeks for delivery. * The Children's Television Workshop is a non-profit organization.

B

© 1987 Worldvision Enterprises, Inc. All Rights Reserved. © 1987 Hanna-Barbera Productions, Inc. as to cartoon characters and packaging.

Extra!

by Ellen R. Mednick

Water, water everywhere—including right here. So take a dip into this month's Extra! and have a swimming good time!

Water Wheels

Ride the rapids in this amazing canoe maze. But watch out! There are three canoes—red, yellow and purple. Each canoe must race down the river in its own colored path. Only one path will lead you safely to the finish. The paths pass under each other, as if you were traveling under a bridge. For example, you can follow the red path as it passes under the yellow. **Answer on the Did It! page.**

Water Magic

Can't figure out the answers to the water riddles below? No sweat! Just look at the number next to the riddle. Then search for the squares with that number. Write the letters in the order that you find them. Then separate the letters into words. Presto, change-o—the solution will appear. If you still need help, check out the Did It! page.

1 What did the polluted water say to the filter?
2 What did the ocean say when the plane flew over?
3 What is a frightened skindiver called?
4 What did the man step on when it was raining cats and dogs?
5 What should a prizefighter drink?

2 NO	1 HO	5 LO	3 AC	1 PE	2 TH
3 HI	2 IN	1 IM	4 PO	2 GI	5 AD
5 SO	1 AK	2 TJ	5 FP	3 CK	1 EM
1 YS	3 EN	4 OD	2 US	1 EL	3 OF
2 TW	1 FC	5 UN	3 TH	2 AV	1 LE
3 ES	4 LE	2 ED	1 AR	5 CH	3 EA

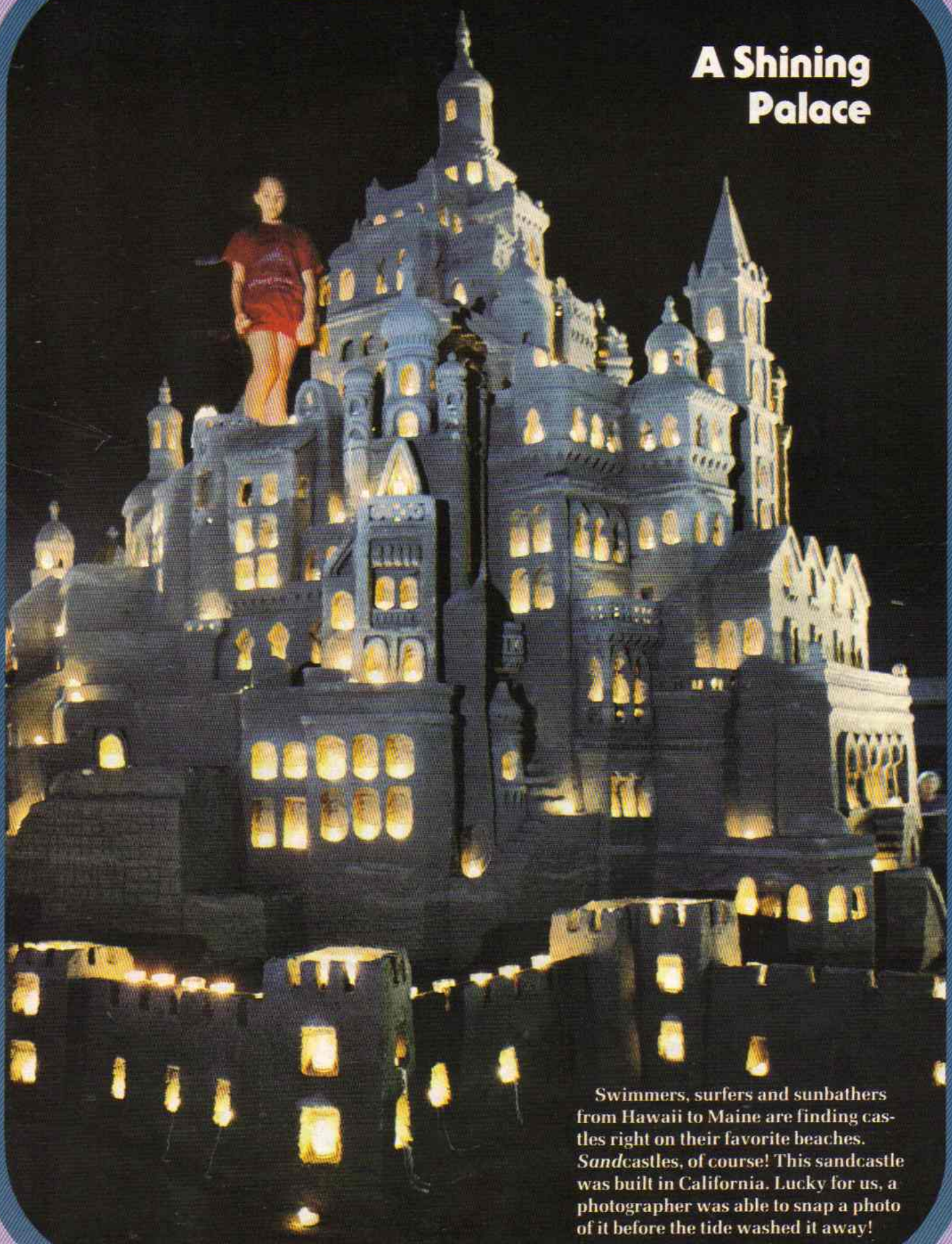
ILLUSTRATIONS BY RICHARD WEISS

Save a Stream

Here's a neat way to help fight water pollution. How? By adopting a stream. It's real easy. Just send away for a free bumper sticker and stream watchers guide.

Send a long, stamped, self-addressed envelope to:
The Izaak Walton League of America, Inc.
Save Our Streams
1701 N. Fort Myer Drive, #1100
Arlington, VA 22209

A Shining Palace



Swimmers, surfers and sunbathers from Hawaii to Maine are finding castles right on their favorite beaches. *Sand*castles, of course! This sandcastle was built in California. Lucky for us, a photographer was able to snap a photo of it before the tide washed it away!

PHOTO © CHAD SLATTERY